No. 5 Original

In the Supreme Court of the United States

OCTOBER TERM, 1942

THE STATE OF COLORADO, *Complainant*,

vs.

THE STATE OF KANSAS and THE FINNEY COUNTY WATER USERS' ASSOCIATION, a Corporation, *Defendants*.

REPLY BRIEF FOR DEFENDANTS

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REPLY BRIEF FOR DEFENDANTS

I. Preliminary Statement

Defendants' original brief related to their exceptions to the Master's report. They agreed with the basic findings and conclusions therein contained as correct. Defendants' exceptions only related to those changes in language which they deemed necessary to be made by this Court in order to preserve the true intent and purpose of the Master.

The Master apportioned to Kansas 185,000 acre-feet of the average annual dependable water supply. This

amount is some 80,000 acre-feet less than the average annual amount which has heretofore crossed the state line. The conclusion is inescapable that the Master by so doing intended to substitute a dependable smaller amount, in conformity with irrigation needs, for a larger amount which to a very considerable extent was unusable. Such being the case, Kansas made no exception to the apportionment of one-sixth to Kansas and five-sixths to Colorado.

Colorado, in its brief at page 3, makes the following statement:

> "All parties have excepted to the recommended plan of apportionment."

and at page 19 the statement appears:

> "On the third issue the Special Master attempted to make an equitable apportionment, and all parties have excepted to this phase of his report."

Both such statements are incorrect, as is clearly evidenced by the exceptions filed herein by Kansas. Kansas has neither excepted to the apportionment, nor to the plan of apportionment. As a matter of fact, the Master adopted generally a plan of apportionment proposed by Kansas, and any exception made by Kansas, to those paragraphs of the report embodying such plan,

were made for the sake of clarification, and only to prevent future disputes arising over the intent and purpose thereof.

In this reply defendants propose to discuss Colorado's brief and its exceptions to the Master's report. At the outset it appears that Colorado contends that no finding or conclusion of the Master's report is correct or supported by the evidence, and that the long and critical consideration of the evidence by the Master has produced nothing of value for this Court's retention. Such a sweeping repudiation of the report is its own condemnation. It indicates that behind the smoke screen of exceptions Colorado seeks to postpone any final determination of rights as between these two commonwealths, and thus gain for herself further time in which she may proceed with unrestricted appropriation of water without the limitations or restrictions of a binding decree.

II. Contention of Colorado That Any Apportionment of the Waters of an Interstate Stream Which Requires the Placing of a Restriction Upon an Upper State, and Hence Amounts to an Impairment of the Quasi-Sovereignty of That State, Has Been Repeatedly Denied by This Court.

At page 28 of its brief Colorado mentions that the gravamen of the Colorado complaint in this case is the protection against harassment of its water users and the maintenance and safe-guarding of its quasi-sovereign control over its administration of the waters flowing within its borders. At page 31 Colorado states, "In the 21 years which elapsed between this decision (*Kansas v. Colorado*) and the institution of the present suit by Colorado . . . . , it (Kansas) was content to stand by and let its citizens carry on guerilla warfare against the Colorado water users."

The history of this controversy indicates that the State of Colorado recognizes no right of Kansas, or of its water users, to any of the waters of the Arkansas River. In the original case of *Kansas v. Colorado*, Colorado's theory was that she had a right to use, unhindered, all of the waters of the stream. Although this Court in that case denied the soundness of this contention, the dismissal of the case without prejudice left the State of Colorado

free to increase her appropriations and use with resultant further depletions in stream flow, as found by the Special Master (Finding of Fact V). The harassment and guerilla warfare referred to by Colorado was merely the institution by Kansas water users of suits seeking a recognition of their application to beneficial use of the waters of the Arkansas River at a time considerably prior to the application of water by many of the main Colorado ditches for similar uses. These cases were instituted on the basis of declarations of this Court. The cases of *Rickey Land & Cattle Co. v. Miller & Lux*, 218 U. S. 258, 31 Sup. Ct. 11; *Bean v. Morris*, 221 U. S. 485, 31 Sup. Ct. 703; and *Weiland v. Pioneer Irrigation Co.*, 259 U. S. 498, 42 Sup. Ct. 568, were sound precedents for the recognition of earlier priorities of ditches in a lower state against later priorities in an upper state.

When the defendant The Finney County Water Users' Association, acting upon the authority of these cases, instituted its action against Colorado ditches, Colorado remained silent. Each year consumed in the taking of the voluminous evidence was a year gained for Colorado in the increase of her irrigated acreage and the unrestricted appropriation of the water supply. When, however, the motions to dismiss in those cases were over-

ruled, and the possibility of some adjudication appeared imminent, Colorado then instituted this action, based upon the contention that private interests could not adjudicate such rights, but that the action was solely one between two sovereign states. Now again, after fifteen years consumed in the taking of evidence, we find Colorado seeking for a further delay and a postponement of apportionment by a reversion to her position taken thirty years ago and denied by this Court.

Colorado excepts to the determination and recommendation of the Master that an equitable apportionment of the water supply and flow of the Arkansas River and its tributaries between the State of Colorado and the State of Kansas should be made by stating, "any apportionment of the waters of an interstate stream requires the placing of a limitation or restriction on the upper state—in this case, Complainant, State of Colorado, and hence amounts to an impairment of the quasi-sovereignty of that state to the extent of such restriction or limitation" (Complainant's Exception I [a]). This contention has been denied by this Court repeatedly.

In *Kansas v. Colorado*, 206 U. S. 46, 27 Sup. Ct. 655, the principle of equitable apportionment of benefits between two states resulting from the flow of the river was first announced by this Court.

This rule was again recognized in the case of *Wyoming v. Colorado*, 259 U. S. 419, 42 Sup. Ct. 552, this Court, stating at page 564:

> "The upper state on such a stream does not have such ownership or control of the waters flowing therein as entitles her to divert and use them regardless of any injury or prejudice to the rights of the lower state in the stream."

and at page 566 this Court expressly denied the contention of Colorado which is here again raised by the following language:

> "The contention of Colorado that she as a state rightfully may divert and use as she may choose the waters flowing within her boundaries in this interstate stream, regardless of any prejudice that this may work to others having rights in the stream below her borders, cannot be maintained. The River throughout its course in both states is but a single stream, wherein each state has an interest which should be respected by the other."

This same principle again finds expression in the case of *New Jersey v. New York*, 283 U. S. 336, 51 Sup. Ct. 478, at page 479, where the Court states:

> ". . . A river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it. . . . Both states have real and substantial interests in the River that must be reconciled as best they may. The different traditions and practices

> in different parts of the country may lead to varying results but the effort always is to secure an equitable apportionment without quibbling over formulas."

And recently in *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U. S. 92, 58 Sup. Ct. 803, at page 807, this Court states:

> "The claim that on interstate streams the upper state has such ownership or control of the whole stream as entitles it to divert all the water, regardless of any injury or prejudice to the lower state, has been made by Colorado in litigation concerning other interstate streams, but has been consistently denied by this Court."

and at page 809 this Court states:

> "Whether the apportionment of the waters of an interstate stream be made by compact between the upper and lower states with the consent of Congress or by a decree of this Court, the apportionment is binding upon the citizens of each state, and all water claimants, even where the state had granted the water rights before it entered into the compact."

Defendants therefore assume without further discussion here that Colorado's exception to the Master's finding, namely that she should be subject to no limitation or restraint in the use of water, will be recognized as merely a reiteration of a contention which Colorado and

her water users still maintain, in spite of the repeated pronouncements of this Court to the contrary. This Court will further recognize that this refusal of Colorado to accept the repeated declarations of this Court respecting equitable apportionment is the basic and fundamental reason for her sweeping repudiation of the entire report of the Special Master, and is the reason why no constructive suggestions have been offered in these exceptions which look to an adjustment of this controversy. All Colorado seeks is a further postponement of the final determination of this long controversy.

III. The Contention of Colorado That the Decision of This Court in Kansas v. Colorado Made an Equitable Apportionment Between the States of the Waters of the Arkansas River is Unsound.

At page 19 of complainant's brief is the following statement:

> "The three main issues presented by the pleadings are:
>
> "(1) Is Colorado entitled to an injunction against the further prosecution in a lower federal court of the cases brought by a Kansas water user against Colorado water users?
>
> "(2) Has Colorado destroyed or threatened to destroy the equitable apportionment of the benefits from the flow of the stream which this Court

by its decision in *Kansas v. Colorado* found had not been impaired by Colorado at that time?

"(3) If the answer to (2) is in the affirmative, what is an equitable apportionment between the states?"

With the first of these issues, as defined, Kansas is not in disagreement. The second is incorrect. It is assumed therein that this Court has prior to this case made an equitable apportionment of the waters of the River. That it has not done so will be more clearly pointed out in the discussion which follows. With the third issue, namely, "What is an equitable apportionment between the states?" we agree.

The second alleged issue, as framed by Colorado, presents an entirely contradictory position to her contention that there should be no limits imposed upon an upper state which impairs its quasi-sovereignty, by arguing that this has already been done and that this Court in the case of *Kansas v. Colorado* made an equitable apportionment between the states of the waters of the Arkansas. The Master expressly repudiated this contention, vigorously urged before him, that the effect of the Kansas-Colorado case amounted to an apportionment of the waters of the Arkansas River. Instead he found that equitable apportionment as between the two

states should be made in this case, and thereafter proceeded to make such apportionment as on the basis of the evidence to him seemed proper.

Because much of Colorado's brief is consumed in references to the former case, defendants feel called upon to review the issues presented by that case and show that no apportionment was or could have been made under the issues framed therein. In the case of *Kansas v. Colorado*, Kansas sought an injunction to restrain Colorado from diverting or using any of the waters of the Arkansas River, claiming a right to have the waters of that stream flow into Kansas undiminished under the common law riparian doctrine. Colorado claimed the complete ownership of the entire water supply of the stream, and the right of diversion and use, even to complete exhaustion of stream flow. The sole question raised by the issues was whether Kansas was entitled to an injunction which would completely restrain Colorado from the use of any waters for irrigation purposes from the stream. Kansas failed to maintain this issue, and this Court dismissed the case without prejudice upon terms which we shall hereafter discuss. In deciding the two diametrically opposed positions, this Court rejected both theories. It announced a new principle to be applied in determining the rights of

sovereign states with respect to the waters of an interstate stream. It there for the first time laid down the principle of equitable division of the benefits arising from the flow of an interstate stream. This case was a pioneer in this field of law, and has been so referred to by all writers on the subject. The principle there laid down became subsequently the basis for adjudication of interstate water disputes.

The reluctance of the court to exercise its extraordinary powers in a controversy between two sovereign states, unless the invasion of right is established by clear and convincing evidence is well known. In *Missouri v. Illinois*, 200 U. S. 496, 521, 26 Sup. Ct. 270, it was said:

> "Before this court ought to intervene, the case should be of serious magnitude, clearly and fully proved, and the principle to be applied should be one which the court is prepared deliberately to maintain against all considerations on the other side."

In *New York v. New Jersey*, 256 U. S. 296, 309, 41 Sup. Ct. 492, 496, is this expression of the rule:

> "Before this court can be moved to exercise its extraordinary power under the Constitution to control the conduct of one state at the suit of another, the threatened invasion of rights must be of serious magnitude and it must be established by clear and convincing evidence."

Likewise, this Court has announced that in such suits between states the burden resting upon the complainant state of proving its case is much greater than in an ordinary suit between parties. It was said in *North Dakota v. Minnesota*, 263 U. S. 365, 374, 44 Sup. Ct. 138, 139:

> "In such action by one state against another the burden on the complainant state of sustaining the allegations of its complaint is much greater than that imposed upon the complainant in an ordinary suit between private parties."

Likewise in *Connecticut v. Massachusetts*, 282 U. S. 660, at page 669 it was said:

> "The burden on Connecticut to sustain the allegations on which it seeks to prevent Massachusetts from making the proposed diversions is much greater than that generally required to be borne by one seeking an injunction in a suit between private parties."

Under such declarations, is it to be assumed that the adjudication of this Court was more than a final determination that the State of Kansas could not claim an unqualified right to the uninterrupted flow of the Arkansas River? Is it to be assumed that this Court would declare for the first time a principle of law which for the

future was to be the yardstick by which the rights of sovereign states in and to the waters of an interstate stream were to be determined, and then proceed in the same case to adjudicate rights thereunder when such relief was not a claim or issue in the cause, and with respect to which no evidence was adduced? We think not.

The cause of action in the old case was to enjoin a trespass or a continuing nuisance. No proof relating to equitable apportionment could have been introduced as a part of the old case. The issue raised by both states was diametrically opposed to that theory. The issue of equitable apportionment has never before this case been pleaded in any action between these two states.

If this Court had dismissed with prejudice the action of the State of Kansas, no one would have claimed that the extent and scope of the adjudication under the issues as drawn had adjudicated anything more than that the State of Kansas could not thereafter make a claim to the uninterrupted flow of the waters of the Arkansas River into Kansas.

How much less in reason is there to recommend the binding effect of a decree of dismissal without prejudice.

such as was in fact entered. The decree entered so far as it relates to the bill of complaint is as follows:

> "It is further ordered, adjudged and decreed by the Court that the bill of complaint be, and the same is hereby, dismissed as against all the defendants, without prejudice to the right of the complainant to institute new proceedings whenever it shall appear that through a material increase in the depletion of the waters of the Arkansas River by Colorado, its corporations or citizens, the substantial interests of Kansas are being injured to the extent of destroying the equitable apportionment of benefits between the two States resulting from the flow of the river."

There is nothing in this decree that adjudicates the respective rights of the two states. There was no factual declaration of any finding by the court which equitably apportioned the benefits or the flow of the stream as between the two states. Definition and delineation of the respective rights of each state was left for determination to a future action when the power of the court should be invoked to specifically define the rights of the two states in the water supply of the stream under issues drawn pursuant to the principle of law announced there for the first time. In *Kansas v. Colorado*, supra, *the character of the right was announced. The definition of the extent of that right was left open to future action in*

a case where that fact could be made the issue and evidence introduced in support thereof.

By the foregoing decree this Court recognized that in the future further depletion, changed conditions, and facts not then apparent from the record or from evidence not necessarily proper under the issues then drawn, the day would come when Kansas would request and be entitled to a determination of the equitable apportionment of the waters, and to abide that time the entire matter of equitable apportionment was left open for future determination. Was the quantum of water supply or a division thereof a matter of evidence in the early case? It was not. There were not in existence records from which a determination of total water supply could have even estimated. The evidence even tended to show that the then existing Colorado diversion would through seepage and return flow make an appreciable and important addition to the supply of water in the stream, and, as Mr. Carpenter testified (Tr. 664), the prospects for irrigating in Western Kansas depends upon the storing of water in Colorado—the greater the storage, the greater will be the area irrigated in Kansas. Was the question of the rights resulting from the early application to beneficial use of water by the Kansas ditches a matter in issue?

It was not. Kansas claimed the right to all the flow, undiminished; and this only was denied. Apparently Colorado, in support of its contention that it was entitled to deplete the water of the River, even to complete exhaustion, claimed that agriculture was an impossibility in Colorado without irrigation, and this Court mentioned in its opinion with respect to these areas that "they would have continued barren and unoccupied" except for irrigation. This contention has, as the evidence here shows, been proved to be utterly untenable.

There were no findings of fact in the decree, which defined or determined the respective rights of both states and which would be mutually binding on both Kansas and Colorado. The unsatisfactory character of the evidence was indicated by the Court in its opinion. The court indicated that it was not clear what surplus water, if any, comes out of the tributaries. It stated that it could not ascertain the amount of seepage and return flow. The court did not find the amount of water Colorado was using. The court did not find the quantum of water Colorado was equitably entitled to, nor did it find the amount of water Kansas was equitably entitled to. Moreover, and most important, it had no knowledge or infor-

mation as to the total quantity of water available for division.

The court, after referring to the voluminous amount of testimony, remarked:

> "We have endeavored to deduce from this volume those matters which seem most clearly proved, and must, as to other matters, be content to generalize and state what seems to be the tendency of the evidence." (206 U. S., page 106.)

and later after discussing value of development to Colorado:

> "That this development is largely owing to irrigation is something of which, from a consideration of the testimony, there can be no reasonable doubt. It has been a prime factor in securing this result, and before, at the instance of a sister state, this effective cause of Colorado's development is destroyed or materially interfered with, it should be clear that such sister state has not *merely some technical right, but also a right with a corresponding benefit.*" (206 U. S., page 108.)

By this later language it in substance said that the issue raised by Kansas, that it was entitled to all the flow, was a claim of merely a technical right. In the present case the issue before the Master is the right of Kansas *based on equality of need* and a right to equality of benefits.

Not only does sound reason and logic support the conclusion that the decree dismissing the case without prejudice left open for future determination the entire question of equitable apportionment, but this is supported by the interpretation of this class of decrees by the Supreme Court of the United States and by other courts.

The case of *Vandalia R. Co. v. Schnull*, 255 U. S. 113, 41 Sup. Ct. 324, was a suit against a railway company to restrain it from charging or receiving any other compensation than that mentioned and described in a certain order of the railroad commission. One defense urged was that a previous case decided by the Supreme Court of the United States was *res adjudicata*.

> "The final contention of defendants in error is that *Wood v. Vandalia Railroad Co.*, 231 U. S. 1, 34 Sup. Ct. 7, 58 L. Ed. 97, is *res adjudicata* of the issues in this case. The suit was by the Railroad Company to restrain the order of the Commission involved in the present litigation, and the ground of attack was, as it is here, that the rates ordered were not compensatory of the service to which they applied. The averments of the bill we held unsustained by the proofs and nothing more was decided. The judgment was not that the order of the Commission was valid but that it was not shown by the bill to be invalid, and the bill was dismissed without prejudice. That is, without preclusion of the right to show it invalid when attempted to be enforced at a subsequent period.

Missouri v. Chi., Burl. & Quincy R. R., 241 U. S. 533, 539, 540, 36 Sup. Ct. 715, 60 L. Ed. 1148. We cannot therefore yield to the contention."

Likewise in the Kansas-Colorado case there was no affirmative decree entered adjudicating and defining an equitable division of the waters of the Arkansas River. This Court evidently did not feel that under the issues and proof it was called upon to exercise its powers to the extent of entering an affirmative decree apportioning the waters of the stream as between the two states. It therefore dismissed the case without prejudice, recognizing that the time would come when in a proper proceeding it would be required to define the extent of the right of each state in and to the waters of the Arkansas River.

In the case of *Missouri v. Chicago B. & Q. R. Co.*, 241 U. S. 533, 36 Sup. Ct. 715, at page 717 the court said:

> "In other words, the decree enjoining the enforcement of the statute in that case was also qualified as without prejudice to the enforcement of the statute in the future if a change in conditions arose. The doctrine in the first aspect nowhere finds a more lucid statement than the one made on behalf of the court by Mr. Justice Moody in *Knoxville v. Knoxville Water Co.*, 212 U. S. 1, 53 L. Ed. 371, 29 Sup. Ct. Rep. 148. It has since been repeatedly applied in language which, in the completest way, makes the meaning of the limitation 'without prejudice' in such a case clear, and

leaves no ground for any dispute whatever on the subject. *Willcox v. Consolidated Gas Co.*, 212 U. S. 19, 53 L. Ed. 382, 48 L. R. A., n. s., 1134, 29 Sup. Ct. Rep. 192, 15 Ann. Cas. 1034; *Northern P. R. Co. v. North Dakota*, 216 U. S. 579, 54 L. Ed. 624, 30 Sup. Ct. Rep. 423; *Louisville v. Cumberland Teleph. & Teleg. Co.*, 225 U. S. 430, 56 L. Ed. 1151, 32 Sup. Ct. Rep. 741; *Missouri Rate Cases* (*Knott v. Chicago, B. & Q. R. Co.*), 230 U. S. 474, 57 L. Ed. 1571, 33 Sup. Ct. Rep. 975; *Des Moines Gas Co. v. Des Moines*, 238 U. S. 153, 59 L. Ed. 1244, P. U. R. 1915 D, 577, 35 Sup. Ct. Rep. 811. A complete illustration of the operation of the qualification is afforded by the North Dakota case, just cited, since in that case, as a result of the qualification 'without prejudice,' the case was subsequently reopened, and upon a consideration of new conditions arising in such future period, a different result followed from that which had been previously reached. 236 U. S. 585, 59 L. Ed. 735, L. R. A. ——, ——, P. U. R. 1915 C, 277, 35 Sup. Ct. Rep. 429, Ann. Cas. 1916 A, 1."

The decree referred to in the North Dakota case above cited was "Affirm the decree without prejudice to the right of the railroad company to reopen the case by appropriate proceedings, if after adequate trial it thinks it can prove more clearly than at present the confiscatory character of rates for coal." It will be noted that the decree referred to in the North Dakota case was affirmative in its character, definitely and finally determining

an actual issue involved in the case; while in *Kansas v. Colorado* no decree was entered which definitely adjudicated any right as between the two litigant states, the whole issue being completely left open for a future determination.

The case of *Russell v. Place*, 4 Otto 606, 610, 24 L. Ed. 214, was a suit for infringement of patent, where prior adjudication was pleaded. At page 215 the Court said, respecting the operation of the former judgment pleaded,

> "But to this operation of the judgment it must appear, either upon the face of the record or be shown by intrinsic evidence, that the precise question was raised and determined in the former suit. . . . the whole subject matter of the action will be at large, and open to a new contention, unless this uncertainty be removed by extrinsic evidence showing the precise point involved and determined. To apply the judgment, and give effect to the adjudication actually made, when the record leaves the matter in doubt, such evidence is admissible."

The court likewise said, quoting from *Packet Co. v. Sickles*, 5 Wall. 580, 72 U. S. 550, at page 215 of *Russell v. Place*:

> ". . . the general rule with respect to the conclusiveness of a verdict and judgment in a former suit between the same parties, when the judgment is used in pleading as an estoppel, or is

> relied upon as evidence, was stated to be substantially this: that, to render the judgment conclusive, it must appear by the record of the prior suit that the particular matter sought to be concluded was necessarily tried or determined; that is, that the verdict in the suit could not have been rendered without deciding that matter; or it must be shown by extrinsic evidence, consistent with the record, that the verdict and judgment necessarily involved the consideration and determination of the matter."

The case of *Robinson v. American Car & Foundry Co.*, 142 Fed. 170, was a suit brought for infringement of patent. The decree dismissed the bill for want of equity on the ground that no infringement was shown. The dismissal was without prejudice. The court stated at page 71:

> "As to the estoppel, the court in the first case dismissed the bill without prejudice. This was done for the express purpose of permitting further litigation of the same questions. This being so, neither party can plead the decree as an adjudication, or use it as evidence of estoppel. Estoppels are mutual; if one party is not bound the other cannot be. Hence the argument of plaintiff's attorney that the decree in the first case sustained the validity of the patent cannot be considered. A judgment or decree without prejudice never works estoppel or adjudicates the res."

In the present case the most that can be said for Colorado's contention is that it is attempting to raise an

estoppel without any mutuality, for if the contention of Colorado is carried to its logical conclusion it would be binding upon Kansas, but not binding upon Colorado. Otherwise, Colorado's equitable apportionment of the water supply would be limited purely to that quantum of water necessary to irrigate the 300,115 acres of land which was the amount this Court found Colorado had under irrigation.

In Hardin v. Hardin, 26 S. D. 601, 129 N. W. 108, the court stated:

> "Reservation of right to bring a second action preserves plaintiff's right to prove his cause of action by any competent evidence, although it is identical with that in the first action."

IV. Colorado's Exception to the Finding of the Master That the Average Annual Natural Flow of the River and its Tributaries is 1,240,000 Acre-Feet, and That the Average Annual Dependable Water Supply of the Arkansas River and its Tributaries is 1,110,000 Acre-Feet is Without Substance.

Complainant says that the Master's findings respecting the water supply of the basin are based upon estimates (Complainant's Exception IV-a), and that they cannot constitute any basis for a workable apportionment between the two states (Complainant's Exception IV-e).

Such statements are an effort to avoid the full force and effect of the voluminous water supply testimony which appears in the record at R. 1442 to 1519, Kansas Exhibits 18 to 62 inclusive, covering a 36-year period.

This determination of water supply, which was accepted by the Master, was prepared by the same modern engineering methods whereby the water supply of many of our streams throughout the West have been ascertained for the purposes of apportionment, irrigation uses, and interstate compacts relating to the division of waters of interstate streams. It was based upon the published records from the office of the state engineer of the State of Colorado. It was based upon daily records of river flow, ditch diversions, and other data published by the Arkansas Valley Ditch Association covering a period of more than twenty years. It is the only complete water supply analysis of the Arkansas River basin in Colorado which appears in the record.

The witness whose testimony was accepted by the Master as determinative of the question of water supply was Witness R. I. Meeker, an outstanding irrigation engineer who had been familiar with the River basin for over thirty years. His activity started an an engineer in the Arkansas River basin on the Twin Lakes Reservoir in

1899 and 1900, continued as a hydrographer for the United States Geological Survey on the Arkansas River from 1903 to 1907 (R. 1349), and this was followed by specialized activity on interstate water problems relating to the Laramie, the Rio Grande, the North Platte, Colorado, La Plata, Canadian, and the Arkansas River (R. 1346). The results of his investigational work upon the Laramie River appeared in the case of Wyoming v. Colorado in this Court. From 1919 until 1928 he was Special Deputy State Engineer for Colorado on interstate river litigation and interstate river compact negotiations (R. 1347) relating to the Colorado, La Plata, Arkansas, North Platte and Rio Grande Rivers (R. 1352). He has determined the total water supply of the following river basins, the Colorado River to Yuma, Arizona, the Rio Grande River to Ft. Quitman, Texas, the North Platte to Kearney, Nebraska, the South Platte to the Colorado-Nebraska line, the Arkansas to the 99th Meridian, the Canadian to the 99th Meridian, and the Green River to the Wyoming-Utah line (R. 1352).

In dealing with the Arkansas River water supply his determinations were made by two different methods, one of which was made to check the other. The first method used was by working down from the mountains, using the

records of river flow at Canon City, plus the records of mountain tributaries, plus computed inflows from unmeasured mountain areas, and deducing plains runoff from analytical studies of river inflow between Canon City and Holly for the nineteen-year period from 1912 to 1930 inclusive (Kansas Exhibits 18 to 75, inclusive). In this method the River was divided into sections, and the study made upon a daily basis where daily precipitation records could be examined with respect to influence upon river flow. By this method the amount arrived at as the average annual water supply was 1,290,000 acre feet (Kansas Exh. 55). The second determination, used as a check on the first, was the reconstruction of the Arkansas River flow from the Colorado area, using measured outflows at Holly (4 miles west of the Colorado-Kansas line), plus yearly water consumption by Colorado irrigated lands (Kansas Exhs. 36 to 62, inclusive). The amount arrived at by this method was 1,240,000 acre-feet as the average annual water supply for a 36-year period, and this latter figure was the amount accepted by the Master.

As a matter of fact, the Master no doubt ascertained from the record that, in spite of the fact that Colorado submitted no basin water supply study, Colorado's Wit-

ness Patterson was in substantial agreement with Meeker. At page 3693 of the record the testimony of Witness Patterson shows that he is in substantial agreement as to the water supply of the stream from Canon City to the state line, but that he, Patterson, did not add any estimated or assumed values of tributary consumption because "I did not feel that such values could be treated as a part of the river water supply."

Since, as shown by Kansas' original brief at page 121, some 195,000 acres of land utilizing the water supply are irrigated on the tributaries, if such water supply consumed in irrigating such land, which obviously is a part of the basin water supply, is included, then Colorado's witness is in substantial agreement with the Kansas testimony as to what constituted the entire basin water supply, and the Master's finding of 1,240,000 acre-foot as the average annual water supply was substantiated by both Colorado's and Kansas' testimony. The Master must necessarily have concluded—(*a*) that the tributaries are a part of the Arkansas River basin in Colorado; (*b*) that the water consumed on the tributaries by irrigation is a part of the basin water supply; (*c*) that the acreage irrigated on the tributaries from the water supply of the Arkansas River basin is a part of the benefit to Colorado

resulting from such water supply; and (*d*) that if to Mr. Patterson's figure of the water supply from Canon City to the state line were added the 300,000 acre-feet of water consumed on the tributaries by irrigation uses, his finding was supported by the testimony introduced by both states.

Colorado states, at page 62 of its brief:

> "Under no theory of equity and justice can Kansas . . . water users along the main stream require that such uses on the tributaries be limited or restricted in any way."

and again on the same page:

> "To use the entire basin water supply in Colorado as a basis for determining interstate rights is to apply an unsound formula to arrive at a ridiculous result."

By what processes of reasoning such statements are made is beyond the comprehension of defendants. By such statements one would assume that Colorado believed that the water supply available for use sprang up from within the channel of the main stream, rather than that it represented the mass total of the contribution of all of the tributaries making up such stream. If water supply means anything, it means all the water supply available for irrigation uses; and if benefits derived by Colorado

through irrigation uses means anything, it must include all of the irrigated area within the basin which operates to deplete and consume such water supply, particularly since some of Colorado's choicest irrigated areas exist along the tributaries. Common sense dictates that if tributary water supply was not so used to enhance Colorado benefits, the same would necessarily pass down the tributaries into the main stream, and thence across the state line into Kansas.

We therefore unhesitatingly state that the record compels the finding of the Master which was made respecting both the average annual water supply and the average annual dependable water supply of the basin.

V. Colorado's Method of Dealing With the Problem of Equitable Apportionment of the Water Supply Through the Use of Mass Averages Without Reference to Daily Flows Does Not Present an Accurate Picture, and Such Method Has Been Disapproved by This Court.

The factual development of Colorado's brief is largely confined to the conclusions of Witness Patterson, with a few minor exceptions, and the water statistics for the most part show averages on a seasonal or annual basis, with a complete avoidance of *basin water supply or daily river flows.*

Since we are dealing in this case with the problem of equitable apportionment of the water supply through the utility of stream flow for irrigation uses, intelligent and fair appraisement of that problem must of necessity be dependent upon the quantum of the total available water supply of the basin, and the character of river flow crossing the state line into Kansas on a daily basis. Crops can only be produced through a continuity of flow day by day, and not through average seasonal flows, which largely result from flash floods, or which do not pass down the river in such form or at such times as to be available for crop needs.

The Master clearly recognized that water for irrigation use was the main consideration in this case, and that the flow of the stream day by day furnished practically the sole criterion of its continuity and dependability for irrigation purposes. The use of acre feet quantities annually, seasonally, or sometimes by months, and averages covering a period of years where excessive flows are included, focusing attention on bulk quantities of water only, and thus diverting attention and consideration from the real and fundamental question of the actual dependable stream flow day by day, from which irrigation requirements must be met, gives the Court an inaccurate pres-

entation of the true picture. This is the method employed throughout Colorado's brief, and is the same method employed by Colorado in the case of *Wyoming v. Colorado*, 259 U. S. 419, 42 Sup. Ct. Rep. 552, which method was referred to by Mr. Justice Van Devanter at page 560 of the opinion in the following language:

> "Colorado's evidence, which for convenience we take up first, is directed to showing the average yearly flow of all years in a considerable period, *as if that constituted a proper measure* of the available supply. We think it is not a proper measure, and this because of the great variation in the flow. To be available in a practical sense the supply must be fairly continuous and dependable."

The court further states, at page 561:

> "We have dealt with the matter of average flow at this length because throughout Colorado's evidence and in her brief it is treated as if it were a proper measure of the supply available for practical use. It is there applied to the Laramie not only directly but indirectly by increasing the gauged flow for a particular year or period by percentages derived by comparing the flow of the Poudre for that year or period with the average for the 30 years including those in which the flow was so extraordinary that concededly much of it neither was or could be used. Thus, water which is not a part of the available supply is counted in measuring that supply."

Mr. Justice Van Devanter might well have been considering Colorado's evidence and brief in this case.

This answer brief would be entirely too voluminous if defendants were to attempt to point out in detail all of the errors lurking behind the mass of averages presented by Colorado, or all of the faulty conclusions which are attempted to be drawn therefrom. We here have only the space to point out a few which may serve as examples of the many which must be necessarily omitted. The Master, who had this same material presented to him, had ample opportunity to form his judgment with respect to the witness who prepared most of this material. The Master had many months in which to analyze the mass of statistics and determine their applicability to the true situation, and defendants must rely upon the skill and care with which he eliminated the nonessential facts from those having real probative value in this case, and from which he arrived at a correct determination of the basic and fundamental facts which the record discloses.

VI. Colorado's Contention That There Has Been no Material Increase in the Depletion of the Arkansas River Since the Decision in Kansas v. Colorado is Contrary to All the Evidence Accepted by the Master as Having Probative Value on This Subject.

Colorado in its brief excepts to the following finding of the Master:

> "There has been since the taking of the testimony in the case of *Kansas v. Colorado*, cited in 206 U. S. 46, in 1907, a material increase in the river depletion by Colorado of the water supply of the Arkansas River which has been consumed and used by Colorado users for irriagtion purposes." (Finding of Fact IX.)

From page 33 to page 43 of its brief, tables appear, containing only yearly and seasonal averages, the purpose of which is to support its contention that there has been no further depletion of the water supply since 1907. Most of these tables deal with a period from 1908 to 1938. The claimed reason for selecting this period was that it dealt with a sequence of years following the decision in the case of *Kansas v. Colorado*. The effect of the choice of these dates is to avoid consideration of a period of large water depletion, with respect to which this Court in the old case had no facts before it, and with re-

spect to which no decision of the Court could possibly apply.

As indicated by the opinion, records of flow at Canon City were not shown after 1900. The amount of acreage which the Court considered was expressly shown to be only 300,115 acres, as reported by the United States Census for the year 1902. Even though the decision in that case was not announced until May, 1907, it could certainly relate only to the factual information which the Court had before it for consideration. By 1909 Colorado had placed under irrigation in the Arkansas River basin 464,236 acres, or an additional burden of water consumption from 164,121 acres more than the Court considered. Thus, Colorado, in dealing in their brief with the period commencing as of 1908, in effect avoided any showing of the effect of irrigation on over 160,000 additional acres of land, which certainly depleted the waters of the basin to the extent of the water consumed thereon by irrigation. The omission of this critical period was, of course, apparent to the Master from his careful examination of the evidence.

The second defect, which renders unsound any conclusions drawn from the numerous tables submitted by Colorado in its effort to undermine the Master's finding

of depletion, is the complete avoidance therein of any reference to the basin water supply. It is a fact not subject to dispute that the amount of river depletion or water withdrawn for irrigation uses can be determined only by the difference between the actual water supply subject to irrigation use and the residual amount passing across the state line unconsumed.

For example, Kansas Exhibit 70, shown opposite page 76 of defendants' original brief, shows that the state line outflow in both 1906 and 1929 amounted to 260,000 acre-feet. Standing alone this matter easily could be accepted as an indication that there was no difference in water depletion in these two periods. However, if we turn to the essential fact of the water supply available, we find that in the 1906 period the basin water supply available for use amounted to only 990,000 acre-feet, so that a residual outflow of 260,000 acre-feet indicated a water consumption or depletion in Colorado amounting to 730,000 acre-feet. In the year 1929 we find that the water supply available for use amounted to 1,410,000 acre-feet, which with the residual outflow of 260,000 acre-feet indicated a water consumption or depletion by Colorado of 1,150,000 acre-feet, or an increase in depletion

of the water supply of 420,000 acre-feet more in the later period than in the earlier.

As hereinbefore stated, the State of Colorado from the beginning of this case has studiously avoided introducing any complete analysis of basin water supply, even though this fact was of primary importance in the determination of both the issues of apportionment and depletion. The only effort made by Colorado to produce any analysis of water supply related to only a small portion of the basin, namely, that of the river section between Pueblo and Holly, clearly omitting any reference to the water supply required to irrigate over 200,000 acres in the basin upon the tributaries and on the main stream above Pueblo. Such omission apparently did not mislead the Special Master.

The testimony of Colorado, produced by its main water engineer, Witness Tipton, relating to this limited area only, was most extensive, taking up over 800 pages and including over 60 exhibits. This water study of Colorado for this portion of the basin was set up in an attempt to minimize as far as possible the extent of Colorado's depletion of stream flow during the period from 1904 to 1932. It contained, however, glaring inconsistencies which were undoubtedly discovered by the Special Master from

his examination of the evidence. It omitted large quantities of the water supply of the River, so as to produce the absurd results in many instances, of minus quantities of tributary inflow, during periods when the Colorado stream flow records showed large quantities of tributary flow. Tipton stated in his testimony that he obtained tributary inflow in his computations by whatever was left after he *took out whatever he wanted to* for seepage and return flow and regulation waste (R. 4614).

A few instances of the errors in this testimony are illuminating. For the seven months' period October to April, inclusive, Tipton's study produced these interesting results. The tributary flow of 1911 for that period showed a minus quantity of 18,000 acre-feet (R. 4668). For 1925 Mr. Tipton's calculations resulted in a minus 6,000 acre-feet (R. 4669), and yet in that particular year the records in the State Engineer's office showed a contribution of 99,844 acre-feet from the Purgatoire (R. 4670), and 5,539 acre-feet from Wild Horse Creek (R. 4671), only two of the many tributaries contributing to the water supply of the river. For 1922 his figure for tributary inflow amounted to only 9,000 acre-feet; for 1912 a minus 2,000 acre-feet; for 1914, one of the years of the highest water supply in the Arkansas basin, a minus 11,000 acre-feet;

for the year 1927 a minus 23,000 acre-feet; and for the year 1928 zero acre-feet (R. 4677). Other years showed remarkably small amounts of tributary inflow for this period. During the period 1911 to 1932 Mr. Tipton's deductions for seepage, return flow, regulation waste, and reservoir exchange amounted to 4,630,000 acre-feet during the October to April period, with only 823,000 acre-feet of tributary inflow (R. 4678).

It is interesting to note that in Colorado's briefs to this Court it has discarded the testimony of its main witness relating to the water supply in the section between Pueblo and Holly, so effectively was this testimony discredited. This probably accounts for Colorado's avoidance of any question of basin water supply in any material presented in its brief to this Court.

At page 33 of Colorado's brief a table is submitted purporting to represent annual diversions, returns, and depletion from Pueblo to the state line for certain selected periods. Complainants attempt to show by comparing the period 1904 to 1911 with 1921 to 1930 that there was 55,000 acre-feet less depletion of the waters of the River in Colorado in the later period than in the earlier. Since the only true measure of depletion is the difference between the basin water supply and the amount unconsumed

which passes out as outflow, the method used by Colorado is erroneous and misleading, and cannot possibly reflect depletion. It is a fact which cannot be disputed that the diversions there used are only a partial list of the total diversions for irrigation in the Arkansas River basin in Colorado. Omitted therefrom are all of the diversions of water for irrigating over 200,000 acres of land upon the tributaries and upon the main stream above Pueblo in the rather productive Canon City area. It likewise fails to give consideration to the substantial water depletion resulting from water storage evaporation. The figures used in this tabulation do not include all of the water actually diverted to and used on the land, for as was pointed out by Witness Knapp, ditches supposedly recording diversions from the River in the Pueblo to Holly section intercepted large quantities of tributary water and applied the same before it ever reached the River (R. 5150). Thus, large quantities of water actually used and applied to the land are not shown as diversions by Colorado. Likewise, there is a failure to include in diversions water consumed by pumping from wells in this river section (R. 5150).

The true facts disclose an entirely different picture than the alleged 55,000 acre decline in depletion. While the

use of the eight-year period 1904 to 1911, contrasted with the ten-year period 1921 to 1930, obviously permitted the inclusion in the latter period of the year 1921, the year of the devastating Pueblo flood, and 1923, the wettest year on record, both of which were excluded in the determination of dependable water supply, the facts nevertheless are as follows: The average water supply 1904 to 1911 amounted to 1,210,000 acre-feet, and the state line outflow amounted to 381,000 acre-feet; and in the period 1921 to 1930 the average water supply amounted to 1,409,000 acre-feet, and the state line outflow amounted to 376,000 acre-feet (Kansas Exh. 70). Thus, in the later period, although the water supply was more abundant by 200,000 acre-feet, the outflow was 5,000 acre-feet less. So we see that, even though in the latter period there were included two abnormally high water years, when 960,000 acre-feet and 820,000 acre-feet, respectively, passed across the state line, we still find a depletion of approximately 205,000 acre-feet more water in the later period than in the earlier.

If we take the first five years, 1904 to 1908, and compare the depletion with the last five years 1926 to 1930, thus eliminating the abnormal years of 1921 and 1923, the facts are as follows: During the period 1904 to 1908

the average annual water supply of the basin amounted to 1,302,000 acre-feet, and the state line outflow amounted to 504,000 acre-feet; and in the period 1926 to 1930 the annual water supply of the basin amounted to 1,312,000 acre-feet, and the state line outflow amounted to 264,000 acre-feet (Kansas Exh. 70). Here, although the water supply was practically the same—only 10,000 acre-feet more in the recent period than in the earlier period—we find that 340,000 acre-feet less water passed across the state line than in the earlier period.

Again, if we use for illustration the period 1901 to 1905, which is the period from the time of the institution of the Kansas-Colorado case until the close of the taking of evidence, and compare it with the last five-year period 1926 to 1930 on which there is any water supply data for the basin, we find the following situation: The average annual water supply of the basin 1901 to 1905 amounted to 1,118,000 acre-feet, and the state line outflow amounted to 464,000 acre-feet. During the period 1926 to 1930 the total basin water supply amounted to 1,312,000 acre-feet, and the state line outflow amounted to only 264,000 acre-feet. Thus, from the period ending with the close of testimony in the old case to the latter period the extent of increased depletion amounted to approximately 394,000

acre-feet. A more extensive discussion of depletion appears in defendants' brief, pages 66 to 81, inclusive.

One fact, however, stands out in the record, which needs no irrigation engineer to support its conclusiveness. 257,957 additional acres of land were placed under irrigation in Colorado between 1902 and 1929 (Kansas Exh. 52, R. 1507). The permanent consumption of water utilized for the growing of crops on this increased acreage would unquestionably deplete the basin water supply to the extent of the water so used. The testimony of Witness Meeker shows that the additional consumption between 1907 and 1930 amounted to 300,000 acre-feet (R. 1565). Even Colorado's Witness Tipton admitted a net increase in water consumption by Colorado (R. 3223).

Refering to the table shown on page 39 of complainant's brief, purporting to indicate the increase in usable water for Kansas during this same period, 1908 to 1938, we find again a lack of any reference to, or a comparison with, the basin water supply shown in those respective years. However, this table is subject to an even greater criticism. To attempt to indicate usability of water merely on a basis of averages for an entire period, April to September, inclusive, and not upon a daily basis, is to eliminate from consideration completely the question of continuity of

flow, which is primary from the standpoint of irrigation use. For example, if we take the years 1918 with 19,000 acre-feet of usable flow, 1927 with 91,400 acre-feet of usable flow, and 1929 with 68,000 acre-feet of usable flow, and compare these amounts of so-called usable flow with the water supply in those respective years, we find that in the year 1927 there was 370,000 acre-feet greater basin water supply than in the year 1918, and in the year 1929, 270,000 acre-feet greater basin water supply than in 1918 (Reference, Kansas Exh. 70); but if we compare these with the picture of usability disclosed by the daily flows of the River, shown by the hydrographs appearing opposite page 90 of defendants' brief, we find that the so-called substantial usable flows for the years 1927 and 1929 resulted from floods which came about the 20th of July in 1927 and approximately the 8th day of August in 1929. It can be clearly observed from such reference that prior to those dates Kansas water users had practically no supply of any utility for crop production, and that by the latter part of July and the 1st of August all crops dependent upon irrigation water would have been destroyed because no usable supply was available. It takes no irrigation expert to realize that usable water, as indicated by Colorado's misleading use of averages, would be usable only for the purpose of seeing whether

the ditches would still hold water after the earlier months of disuse.

Space does not permit us to take up each year in detail and present the erroneous picture presented by the mass totals classified as usable water, but in this connection a reference to page 90 of Kansas' brief and to the tables appearing at pages 96 to 100, inclusive, would be most illuminating. Following is a table showing an analysis of the character of flow across the state line:

ANALYSIS OF FLOW OF WATER PASSING THE STATE LINE AS RECORDED IN SECOND-FOOT DAYS FOR THE APRIL TO SEPTEMBER PERIOD

Year	Total April to September Period	Total During Period of 15 Days Only	Total During Remaining 168 Days	Number of Days During Season When Flow was Below 100 S. F.
1908	22,665	15,635	7,030	122 below 100
1909	95,506	53,900	42,506	101 below 100
1910	39,063	26,595	12,468	133 below 100
1911	24,490	18,490	5,618	148 below 100
1912	67,547	45,695	21,852	100 below 100
1913	16,723	12,086	4,637	167 below 100
1914	263,212	114,090	149,122	80 below 100
1915	216,693	93,300	123,393	24 below 100
1916	35,266	26,620	8,646	131 below 100
1917	9,527	2,570	6,957	163 below 100
1918	13,258	4,855	8,403	145 below 100
1919	75,430	35,230	40,220	101 below 100
1920	59,575	29,130	30,445	104 below 100
1921	454,390	253,440	200,813	83 below 100
1922	18,145	9,280	8,865	131 below 100
1923	296,925	126,020	170,903	63 below 100
1924	44,756	18,053	26,703	118 below 100
1925	90,245	65,690	24,555	125 below 100
1926	20,117	10,585	9,532	130 below 100
1927	197,924	140,820	57,104	121 below 100
1928	94,235	63,640	30,595	125 below 100
1929	63,129	59,837	3,292	141 below 100
1930	26,288	12,699	13,589	122 below 100
1931	13,058	8,118	3,940	155 below 100
1932	10,244	7,292	2,952	166 below 100
1933	65,113	42,730	22,383	106 below 100
1934	12,667	10,600	2,067	172 below 100
1935	83,217	52,470	30,747	103 below 100
1936	154,743	119,240	35,503	124 below 100
1937	53,286	42,012	11,274	114 below 100
1938	81,042	44,270	36,772	99 below 100
1939	4,586	1,899	2,857	178 below 100
1940	6,973	4,435	2,973	165 below 100

In the table on page 39 of Colorado's brief there appear three years during the period 1930 to 1938 when the alleged usable supply exceeded 100,000 acre-feet. By making the statement, on page 40 of Colorado's brief, in substance; that the period 1931 to 1938 included eight drought years, there is an attempt to create an impression that even in a drought period the usable supply for Kansas had been increased. Since Colorado introduced no basin water supply data for this period, it probably felt safe in making the assertion respecting this being a drought period. The record, however, discloses sufficient facts, which the Master undoubtedly carefully analyzed, to indicate that far from being drought years the three years when Kansas' alleged usable supply exceeded 100,000 acre-feet were years of very abundant water supply. This is shown by the fact that the May to September, inclusive, Canon City flow for the year 1935 was 335,000 acre-feet, for the year 1936, 338,000 acre-feet, and for the year 1938 375,000 acre-feet. Since the long-time 53-year average of the Canon City flow for these months amounted to 322,536 acre-feet, this shows that these years were substantially higher than the average with respect to mountain water supply. If, in addition to this fact, one examines for those particular years the rainfall record on

the plains area, as submitted in Colorado's Exhibit 190, there are found months of exceedingly high precipitation which produced an abnormal condition so exceptional as to probably not again be duplicated for a period of twenty or thirty years. This had two effects.

First, abnormal rainfall in the main irrigated area, which probably provided sufficient moisture for crop development, and where the withdrawal of normal quantities from stream flow in addition, would result in damage to crops. For example, Rocky Ford, in the very heart of irrigation, had precipitation during the month of May for the three years, respectively, of 2.45, 2.95 and 2.43 inches as against a long time 42-year record of 1.98 inches. The month of July, 1936, showed a precipitation of 3.46 inches as against an average of 2.46 inches. The month of August for these three years showed 1.47, .78 and 2.07 inches, respectively, as against an average of 1.43 inches, while the month of September for these three years showed 1.90, 2.03 and 1.14 inches, respectively, as against the long-time average of 0.74 inches. At Ordway, around which is clustered some of the best irrigation projects, we find for the month of May in these years 2.30, 1.80 and 2.22 inches, respectively, against a long-time average of 1.99 inches. Eliminating other ex-

cessive months and passing to the months of September for these years at this station, we find 1.91, 1.72 and 2.37 inches, respectively, as against a long-time average of 0.66 inches. At Las Animas, slightly nearer the state line, for the month of May in these years we find 2.42, 4.59 and 3.22 inches, respectively, as against a 64-year average of 1.98 inches. For June of 1935 we find 3.53 inches, respectively, as against an average of 1.47 inches. For July of 1936 and 1938 we find 2.36 and 2.67 inches, respectively, as against an average of 2.21 inches. In September for the three years we find 2.19, 1.71 and 1.91 inches, respectively, as against an average of .95 inches. At Lamar, some 75 miles west of the state line, for the month of May in the three years we find 2.71, 4.45 and 4.37 inches, respectively, as against a 42-year average of 2.17 inches. At Holly, a few miles west of the state line, for the month of May in the three years we find 2.19, 3.13 and 3.76 inches, respectively, as against a long-time average of 1.97. The data given by no means constitutes the entire record of abnormal precipitation, but it serves to illustrate the reason why during these years large amounts of unused water passed across the state line into Kansas.

Second, abnormal precipitation on the watersheds of

the Big Sandy and Two Buttes Creek, which enter the Arkansas River just west of the state line, and which normally contribute little water to stream flow, caused under these conditions of abnormal precipitation, large quantities to pass across the state line. North of the River at Limon we find such precipitation figures as 5.29, 2.92, 3.26, 4.68, 2.49 and 2.57 inches, all far above the long-time average for similar months. Other stations north of the River reflect similar abnormal precipitation. Turning to the watershed of Two Buttes Creek at Springfield, we find the monthly precipitation as follows: 4.28, 3.35, 3.60, 2.70, 2.73 and 2.85 inches, again reflecting precipitation during these years far above the long-time average.

At page 42 of Colorado's brief appears another table, purporting to represent diversions from the Arkansas River by ditches in certain counties in Kansas. This brief would be entirely too protracted to continue as we have done to demonstrate the defects which are concealed by the use of averages. It is only necessary to state that there were no records of any kind or character kept prior to the year 1915 of ditch diversions in Kansas. Records were kept only from 1915 to 1922 of those periods when water for the Garden City group was being

rotated, because of the insufficient supply, thus complete figures for those years must be estimates. Only since 1922 are actual records available for the Garden City group of ditches. During the entire period no diversion records were available for the Syracuse group. Thus, any figures respecting diversions appearing prior to 1922 in Kansas are largely dependent upon the imagination of their author. Any conclusion drawn from such created data must on its face be inaccurate and unconclusive. We have this strange situation of tables presented, where for the earlier period there are no records of diversions, and where for the later period, 1931 to 1938, there are no figures respecting water supply.

In concluding the discussion upon this point defendants deem it necessary to direct attention to another statement made by Colorado which is plainly erroneous.

At page 37 of Colorado's brief is the statement:

> "The period 1895 to 1930 selected by the Kansas witness began just after the drought of 1888 to 1894 (Tr. p. 3424, 3485, Colo. Ex. 17, 18), and ends just before the recent drought of 1931 to 1940. Since major floods during the period are included in the annual totals and since by the period selected the droughts of major intensity and duration that immediately preceded and followed it are excluded, Colorado contends that the period averages are thereby distorted, constitute

> greater than normal values and do not properly represent the true conditions."

The true facts are, that for the years 1885 to 1894 records at Canon City show an average yearly flow of 592,400 acre-feet as contrasted with an average yearly flow of 484,000 acre-feet for the period 1895 to 1904 (Kan. Exhibit 18) and an average yearly flow of 595,000 acre-feet for the period 1895 to 1930. (Kan. Exhibit 25.)

VII. Colorado's Argument That Kansas Has Suffered no Damage by Reason of Colorado Water Uses is Predicated Upon the Erroneous Assumption That Since no Right Has Been Defined, or no Water Apportioned, Kansas Has Not Been Damaged.

Colorado takes exception to the finding of the Special Master that by reason of the water supply which has been consumed and used by Colorado users for irrigation purposes there have been injuries to the substantial interests of Kansas (see Finding of Fact Five). It argues in support thereof, at page 44:

> "There is no showing that any Kansas enterprise, irrigation, industrial, municipal, or otherwise, is in a worse condition now than at the time of the former case . . . ."

This argument is apparently predicated upon the erroneous assumption that because the extent of the right

to water for irrigation purposes from the Arkansas River has never been defined, Kansas is not in a position to prove damage.

If the State of Kansas, as the lower state upon an interstate stream, is entitled to an equitable apportionment of the flow of such stream, as this Court has heretofore declared, then the damage suffered by the lower state is necessarily dependent upon the extent to which the upper state has invaded or destroyed that right. To argue that Kansas has not been damaged, merely because the extent or quantum of the right has never been defined, hardly comports with the decisions of this Court made in the case of *Wisconsin v. Illinois*, 278 U. S. 399, 73 L. Ed. 426, where the Court had first to determine the rights of the complainant State of Wisconsin before it could determine the extent of the damage resulting from the withdrawals of water from Lake Michigan by the City of Chicago and the State of Illinois through the Chicago Drainage Canal. It likewise does not accord with the finding of this Court in *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U. S. 92, 58 Sup. Ct. Rep. 803, where at page 807 the Court states:

> "As the La Plata River flows from Colorado into New Mexico, and in each state the water is used

> beneficially, it must be equitably apportioned between the two."

and again, at page 809:

> "Whether the apportionment of the water of an interstate stream be made by compact between the upper and lower states with the consent of Congress or by a decree of this court, the apportionment is binding upon the citizens of each state and all water claimants, even where the state had granted the water rights before it entered into the compact."

Apparently this argument is also based on the fallacious theory that equitable apportionment may not result in any division of the water at all, but may allow one of the states all, or substantially all, of the waters of the stream as an off-set to other advantages of the opponent's position.

As the Court stated in the case of *Kansas v. Colorado*, with respect to the adjustment of the dispute on the basis of the equality of right, it was "to secure as far as possible to Colorado the benefits of irrigation without depriving Kansas of the like beneficial effects of a flowing stream," (27 Sup. Ct. 655, at page 666.) Any destruction of like benefits must necessarily constitute damage, and these have been clearly shown by the record. This Court further states, at page 688:

> "It would not be a defense on the part of the upper riparian proprietor that by the use to which he had appropriated the water he had benefited the lower proprietor, or that the latter had received in any other respects an equivalent."

And yet much of Colorado's argument is based upon population statistics and agricultural production, showing substantial increases, which have resulted from causes entirely independent of the depletion of the water supply of the Arkansas River. The Master from his careful examination of the record undoubtedly felt that when ditches and laterals sufficient to irrigate some 400,000 acres of land where unable to be placed in operation because of a deprivation of water, the same constituted damage. The Master without doubt concluded that when only 22,428 acres in the three counties along the River in western Kansas remain that are still attempting to struggle with irrigation without having to resort to pumping from ground water supplies to make up the deficiencies in flow, that this indicated damage. The Master must surely have decided that the depletion of 300,000 acre-feet of water from the streamflow likewise constituted damage, and that moreover when during 1,905 days out of a total of 3,340 days in a 20-year period, less than 100

second-feet of flow was available for irrigation, that this fact constituted damage. (Kan. Brief, page 94.)

The facts above referred to, constitute the true measure of damage, and the statistical information, largely prepared by Colorado's Witness Patterson, on population, crop values, and assessed valuation appearing in Colorado's appendix B, practically all of which are developments taking place under natural conditions and resulted in spite of the deprivation of a water supply for irrigation, are wholly irrelevant to the issue in this case. It is interesting to observe in this connection that Colorado, at page 1 of its brief states: "The *controversy involves the use for irrigation purposes* of water of an interstate stream." (Emphasis added.)

However, because Colorado has seen fit to inject this type of material in support of its argument, some reference to Witness Patterson's approach to this phase of the testimony is necessary.

At page 3834 of the record Witness Patterson attempted to attribute the gain in population of the counties on the River to a more successful agriculture, and yet at R. 3826 Witness Patterson states that he had not investigated or made any effort to investigate or ascertain the actual rural population, or the population dependent purely upon

agriculture as distinguished from city population or industrial population, or the population which is dependent upon oil. At R. 2866 Witness Patterson stated:

> "If there had been some growth dependent upon stream flow, and if stream flow had been ther destroyed or removed, there would have been a reduction in the rates of gain to a point where the river counties would have shown lesser rates of gain than the comparable adjoining counties."

Witness Patterson finally admitted, at R. 3820, that the development of the river counties to a greater extent than the off-river counties is due to some other factors than stream flow conditions. He further admitted, at R. 3958, that the acreage of crops in Kansas is no indication of the development that might have taken place by irrigation.

Permit us here to point out in this respect that while Colorado through Witness Patterson produced rather elaborate compilations of agricultural data with respect to the acreage of field crops, the value of field crops, and the assessed valuations of agricultural lands, in most instances in connection with statistics relating to the State of Kansas, they did not introduce similar compilations for the Colorado area. For example, as to production of wheat in Kansas, 1881 to 1930 (Colorado Exh. 60), Patterson

testified that as between the decade of the 1880's as compared to the decade of the 1920's that Kansas showed a gain of approximately five times as compared to a substantial doubling of world wheat production (R. 2954). Like records for Colorado were not presented. Upon being asked whether the increase in Colorado was not still greater, and in fact had in the same period increased thirteen times (R. 3964), he replied that he had no records on which to base a conclusion (R. 3965). He was then handed Bulletin No. 91, "Agricultural Statistics, Crops and Livestock, of the State of Colorado, 1933," and cited to page 52, showing the acres, production and value of wheat in Colorado from 1880. He then admitted that the record showed that in 1880 there was only 68,000 acres of wheat in the State of Colorado, and that by 1930 the acreage had increased to 1,659,000 acres (R. 3966), an increase of 24 times.

Witness Patterson's second purpose in introducing this statistical information is disclosed by his statement, "In dividing benefits the total resources of the state should be considered" (R. 3712). It is noticeable that in the entire Colorado brief no comparisons of total Colorado resources are submitted. It would seem that, if the theory of counsel in introducing this evidence, is that equitable

apportionment of benefits should be determined upon a comparison of total state resources, that reference to such comparisons should at least have been made.

As to a number of tabulations in which acres of crops, yields and assessed valuations of agricultural lands where comparisons were made between both states, the unusual procedure was adopted of showing the figures in terms of yield or value per square mile. It is obvious to anyone familiar with both states that the purpose of this was to include in the Colorado statistics thousands of square miles of mountainous and timber country containing untold resources of minerals and timber which never were and never could be used for agriculture, but which nevertheless would minimize the true agricultural resources of Colorado. There was utterly no comparison made on the per-acre basis (R. 3988), although all of the statistics relating to Kansas were produced on a per-acre basis. When it came to a comparison of Kansas with Colorado, the square mile basis was used.

Witness Patterson stated that he made no effort to ascertain in counties in Kansas and Colorado the acreage undeveloped or the acreage of tillable land (R. 3989). He admitted that all grazing lands not suitable to farming operations, unpatented lands, and broken areas in

Colorado were lumped into the square mile basis (R. 3989). It is further interesting to note that in dealing with the matter of assessed valuation the assessed valuation figures which were produced respecting Kansas included the valuations of all farm improvements, as well as coal mines, zinc mines, mining equipment, brick plants, oil wells, oil refineries, stone quarries, mills, smelters, and many other factors. These were compared with assessed valuation figures in Colorado, limited to the assessed valuation of improved fruit land, irrigated land, natural hay land, dry farming land, and grazing land only, after having eliminated from Colorado's statistics values of suburban home property, all agricultural improvements and all timber land (R. 4017). There were no deductions of unpatented land or forest land in Colorado (R. 4027). It was claimed by Witness Patterson that he did not have the records for the five counties along the Arkansas river in Eastern Colorado showing how much of 7,654 square miles therein was subject to assessment (R. 4020), although subsequently (R. 4928) he did produce the figures showing that nearly 1,300 square miles in these five counties were unpatented lands. Mr. Patterson finally admitted (R. 4019) that he did not make an accurate comparison—"I think I was a little in

error." Yet this material is produced in Colorado's Appendix B without comment.

That all of his statistical information had little or no bearing on the fundamental issues in the case is best indicated by Patterson's own admissions. He admitted that the only means by which either of the parties to the controversy may derive benefit of water supply is through diversion in connection with agricultural operations (R. 3721). He admitted that if irrigation as distinguished from general agriculture is involved, then benefit to be derived from water supply is decreased in proportion as the opportunity for diversion is decreased (R. 3722). He admitted that curtailment of opportunity for diversion would result in curtailment of benefits derived therefrom (R. 3723). He admitted that in considering irrigated areas in Eastern Colorado and Western Kansas we should consider what would result to each in the absence of a supplemental water supply (R. 3724). That it probably can be answered best by study of relative success of dry farming operations (R. 3724). That the real answer must be the result in two comparable areas of dry farming, without resorting to irrigation (R. 3724). That comparison should be made in areas where the need for supplemental water is of paramount im-

portance (R. 3726). That unit yield discloses effectively the productivity of the land per acre under natural conditions. We determine what land will do by unit yield (R. 3748). He states further that the benefits under consideration are the increased yields and the increased profits to be derived from the use of water. (R. 3752). That the real question is the benefit to be derived from additional yields of high water crops that can be raised under irrigation (R. 3753).

And yet, admitting all this, he said he doesn't know of dry land comparisons between Kansas and Colorado (R. 3788); and that such comparisons between Western Kansas and Eastern Colorado would have been fine if they had had available Colorado statistics (R. 3780). He makes this statement as one of Colorado's main witnesses, even though such statistics were at all times available to him if he had cared to investigate the facts, and such facts are in this record, produced by Kansas, taken from published Kansas and Colorado agricultural statistics. (See Kansas' brief, pages 61, *et seq.*)

We suggest that all of Colorado's testimony here referred to is entirely irrelevant, and has no bearing upon the fundamental issue in this case; that the real issue

involved, as indicated by the decisions of this Court, is the equitable apportionment of the water supply of the Arkansas River in such manner as "to secure as far as possible to Colorado the benefits of irrigation without depriving Kansas of the *like* beneficial effects of a flowing stream."

VIII. The Stipulation of 1933

Certain statements appear in complainant's brief with respect to the so-called stipulation of 1933. Before the Special Master the contention was made that this instrument had some binding effect upon the parties with respect to apportionment. This induced the Master, in Conclusion of Law Seven, to make the following conclusion:

> ". . . and the stipulation executed by certain officials, attorneys and engineers of the States of Colorado and Kansas purporting to represent said states is not binding upon either of said states, nor to be embodied in a decree in the present suit permanently adjudicating an equitable apportionment of the water supply of the Arkansas River and its tributaries between the two states." (Conclusion of Law Seven.)

While Colorado in its brief apparently recedes from its position that this stipulation has any binding effect as

an equitable apportionment, it does make the following statement, at page 94 of its brief:

> "Colorado says that the stipulation represents a method of allocation of water which all the parties thought to be equitable at the time of execution. Certainly it would not have been signed if the parties had not considered it fair and equitable."

It further states:

> "If the Kansas officials had thought for one moment that the stipulation did not contain a fair and proper allocation of water, they would not have signed it."

Such statements are incorrect. The stipulation speaks for itself. However, statements of this character seem to require answer, even though they have little to do with the decision in this case.

The facts with respect to the background of this instrument are as follows. Some time during the early stages of this case it became apparent that a dam and channel reservoir might be constructed upon the Arkansas River at the Caddoa site as a part of the flood control program of the United States Government. It was also recognized that with a channel reservoir surplus and unusable flood flows which had passed across the state line into Kansas in unusable form, and which could not

be stored because of the lack of feasible reservoir sites in Kansas, could be impounded in such a reservoir, thus conserving for irrigation use water which theretofore had little utility. It was also recognized that such stored waters to the extent of approximately 100,000 acre-feet or more would form a back-log, which upon release during the growing season would be able to supply at least a portion of the water which the Supreme Court might adjudicate to Kansas upon the final determination of the issues in the present case. At that time there was only a small part of the testimony in this case taken, approximately 14 volumes, and it appeared probable that the reservoir, if authorized, might be completed before this case could be submitted to the Supreme Court for final determination. Under such circumstances during the period between dam completion and the determination of equitable apportionment by this Court, the Kansas ditches would be cut off from most the small quantum of water which they were able to capture from these periodical flood flows.

Kansas counsel were therefore faced with the dilemma of either having to take steps to prevent the construction of a reservoir which would permit the furnishing of at least 100,000 acre-feet more of usable water to Kan-

sas during the growing season without in any way affecting Colorado uses, or else arrive at some temporary arrangement which would protect the Kansas existing meager supply between the period of the completion of the dam and the final determination of the question of equitable apportionment. Obviously there would be surplus stored water, and this was arbitrarily divided on a 50-50 basis as a pure temporary expedient. This was its sole purpose. It was intended to be temporary in character pending the determination of the rights of the respective states; it was in no sense intended to be indicative of those rights; and we believe that the stipulation itself shows clearly that these are the facts.

In the first whereas clause, the fact of the period of delay before final submission is recognized, by the language, "and the final submission of the case to the court and the entry of the decree will not be practicable to be reached for some time in the future."

The preservation of existing rights and the present uses is shown by the fourth whereas clause, where the stipulation states:

> "That the parties . . . are willing to cooperate in attempting to bring about such construction by the United States government if assured of the *protection* not only to *all rights which*

> *they now have and which are involved in the present controversy,* but also to their existing water supply in the event the dam should be constructed and put in operation prior to a decree being entered in the Supreme Court of the United States."

In Paragraph 2 the preservation of the status quo is recognized.

Paragraph 8 reads as follows:

> "This stipulation is without prejudice to the claims of either party hereto in the above entitled case, and shall be subject to the decision of the Supreme Court of the United States as to the respective rights of the parties hereto to water flowing in the Arkansas River or stored in said reservoir."

Such language speaks for itself, and indicates clearly that none of its provisions were to have effect on or relate to the determination of the fundamental issue in this case or to the determination of the respective rights of the two states.

The use which Colorado now makes of this stipulation, which was to preserve the status quo of ditches below the dam pending a determination by the Supreme Court of the United States, *i. e.*, by claiming it to be proof of what constitutes an equitable apportionment, is very like the use of the evidence introduced on the reopening of this

case in 1941, relative to the period 1908 to 1938, allegedly for the purpose of showing and relating to the effect purely of the Caddoa Reservoir, but which was instead devoted throughout the brief to the question of equitable apportionment.

We might add that if the purpose which Colorado claims this stipulation was to serve, was intended, not a stipulation but a compact would have been entered into between the two states, or a consent decree entered in this case which would have disposed of the case, and the voluminous testimony taken thereafter would have been unnecessary.

To infer that Kansas has committed itself and its citizens to the principles contained in that stipulation is a rather violent assumption, in view of the fact that thousands of pages of evidence have been taken since that time, and in view of the fact that Kansas was, at that time in this lawsuit, and is still vigorously contending, for an apportionment far greater than the division mentioned in the stipulation.

IX. The So-Called 1916 Settlement

The settlement referred to arose with respect to suits brought by some of the Garden City group of ditches seeking to secure a recognition of their priorities as against Colorado water users. It was identical in its nature to that of The Finney County Water Users' Association which Colorado by this action sought to enjoin, and which right the Master recognized. Neither Kansas nor Colorado were parties to that litigation. If the suit of The Finney County Water Users' Association is without foundation and improperly brought, those cases were likewise without foundation and improperly brought.

Colorado could have pursued the same action at the time they were instituted as she did some ten years later in the case involved in this action. Instead the Colorado users secured a respite from any interference with their unrestricted use of water by an alleged settlement wherein a sum of money was paid to the private interests, and the alleged granting to the Kansas interests of a priority of August 27, 1910. This settlement, or the priorities therein purported to be granted, was never recognized by the state of Kansas or by the State of Colorado nor its water officials. A complete examination of Kansas Exhibit 2 furnished by the State of Colorado, and which contains all

of the recognized priorities in the Arkansas River basin fails to disclose any priority of this date under the name of any Kansas ditch, or any Kansas water user. If the solution of interstate water litigation is a matter for settlement only between the states, or by decision of this Court, then any alleged settlement between private interests has no place in a controversy involving the equitable apportionment of the water of the Arkansas River as between the states of Kansas and Colorado.

X. Colorado's Contention That the Master's Recommended Apportionment Would Result in the Taking of Water From Established Colorado Uses Seeks Merely to Preserve a Condition Which the Master Has Found to be Inequitable and a Present Invasion of Kansas Rights.

Colorado in its brief, under heading (b) at page 74, makes the following statement:

> "That the report of the Master . . . would result in taking water from established Colorado uses . . . ."

and again at page 80, under heading (f), it states:

> "The recommended apportionment would require Colorado to forego present uses in order to deliver water to Kansas at the state line."

This is a complete avoidance of the real question in issue as to what constitutes an equitable apportionment.

While defendants do not admit that the equitable apportionment recommended by the Special Master will injure Colorado water users, as we shall hereafter point out, even assuming for the sake of argument that it would result in some deprivation of past use, if such uses constituted an invasion of Kansas' equitable share of the stream, if those past uses have resulted in depriving Kansas water users of some small portion of the basin water supply to which they are equitably entitled, such argument seeks merely to attempt to induce this Court to recognize an alleged right to all present existing water uses in Colorado, which is based upon a substantial wrong.

The Master refused to follow this specious contention of Colorado, and recognized the decisions of this Court in water cases where, regardless of alleged private rights, or even state interests, restoration of the equities was compelled.

The Supreme Court of the United States has said that use within a state must be within the limits of the state's equitable share. In the case of *Hinderlider v. La Plata River and Cherry Creek Ditch Company*, 304 U. S. 92, 58 Sup. Ct. 803, the ditch company had a decree under an adjudication of January 12, 1898, although it is not disclosed how much earlier its appropriation of water was

made or the date of its filing, and had been exercising its rights under such decree and applying water to its lands since that time. At the time of its decree, and for many years thereafter, the rights of the State of New Mexico and of the State of Colorado as to their equitable apportionment of the stream flow involved had not been determined. This was finally determined in approximately the year 1923 by an interstate compact, which as the court pointed out served the same purpose as a judicial decree. Later, when, in the administration of the interstate compact, water was withheld from the plaintiff ditch, it brought the action in question to enjoin the state engineer from closing its headgates and thus depriving it of water. In refusing to recognize the contention of the ditch company the court said, at page 102:

> "It may be assumed that the right adjudicated by the decree of January 12, 1898, to the Ditch Company is a property right, indefeasible so far as concerns the State of Colorado, its citizens, and any other person claiming water rights there. But the Colorado decree could not confer upon the Ditch Company rights in excess of Colorado's share of the water of the stream; and its share was only an equitable portion thereof.
>
> "The claim that on interstate streams the upper State has such ownership or control of the whole stream as entitled it to divert all the water, regard-

> less of any injury or prejudice to the lower State, has been made by Colorado in litigation concerning other interstate streams, but has been consistently denied by this Court."
>
> "The decree obviously is not *res judicata* so far as concerns the State of New Mexico and its citizens who claim the right to divert water from the stream in New Mexico."

and at page 108:

> "Fifth. As Colorado possessed the right only to an equitable share of the water in the stream, the decree of January 12, 1898, in the Colorado water proceeding did not award to the Ditch Company any right greater than the equitable share."

In the foregoing case the equitable rights of New Mexico and Colorado were not defined until long after the diversion and use and adjudication of the ditch company, but the Supreme Court had no hesitancy in declaring "that the Colorado decree could not confer upon the Ditch Company rights in excess of Colorado's share of the water of the stream; and its share was only an equitable portion thereof," even though the determination of what such equitable apportionment was came long after the beneficial use by the ditch company.

So in the Arkansas River basin existing uses or old priorities cannot properly form the basis of equitable

considerations in determining the apportionment, for they may be the very basis of the inequity. When such apportionment has been decreed on the basis of need and right, these other factors become subservient thereto.

The fact that the equitable apportionment has not as yet been determined, should not be taken to mean that existing uses should limit or circumscribe the apportionment in arriving at a decision, because of a specious claim that it would be inequitable to deprive Colorado users of some past benefits. In *Wisconsin v. Illinois*, 278 U. S. 399, 73 L. Ed. 426, a water case, the extent of the right was the fundamental issue to be determined, but in its decision the Supreme Court of the United States did not hesitate to compel the complete restoration of water to conform to its judgment. The subject of dispute in that case was the right of the complainant states therein to have the water level of the Great Lakes maintained at a point which would permit utilization of docks and harbors and navigation upon the lakes. The defendant state, through one of its agencies, a sanitary district, was diverting water from Lake Michigan for the purpose of diluting and carrying away the sewage of Chicago. Over $100,000,000.00 had been expended by the sanitary district in constructing a canal and providing sewage works.

The court had first to determine the rights of complainants. It did so, and found that the complaining states had the right to have the level of the lakes maintained at a prescribed level. It found that the defendant state should be limited to a diversion which would not reduce the lake levels beyond that point, and definitely fixed the amount of water which could be diverted. The restoration of the just rights of the complainants was decreed where the court said:

> "It therefore is the duty of this court by an appropriate decree to compel the reduction of the diversion to a point where it rests on a legal basis, and thus to restore the navigable capacity of Lake Michigan to its proper level. The 'sanitary district' authorities, relying on the argument with reference to the health of its people, have much too long delayed the needed substitution of suitable sewage plants as a means of avoiding the diversion in the future. Therefore they cannot now complain if an immediately heavy burden is placed upon the district because of their attitude and course." (278 U. S. 367, at page 420.)

It might well be said in the present case that the State of Colorado, relying on the fallacious argument that their lands are a barren waste and are unable to produce crops except through irrigation, and upon the contention that they are entitled to all of the water supply which they are

able to capture from an interstate stream, has too long delayed its termination of unwarranted depletion, and "Therefore they cannot now complain if some additional burden is placed upon them because of their attitude and course."

The complaint that the doing of equity will compel some modification of present inequitable uses is a strange contention in the light of the declaration in its Bill of Complaint that the State of Colorado is willing to do equity. It is, however, a reflection of a continued policy maintained over a long period of time.

That the rights and equities of Kansas never have been considered in the execution of Colorado policy is nowhere better illustrated than by the statement of Engineer Hinderlider in the 24th biennial report for the years 1927 and 1928, at page 34:

> "As noted in the forepart of this article practically all of the water escaping into Kansas is the result of tributary flow entering the river in the lower reaches of the valley." (R. 1739.)

This statement does not reflect any consideration of, or any respect for, the equitable rights of Kansas to stream flow. This right in the contemplation of Colorado was only a right to such water as could not be used or

captured within that state. Kansas' right was to be satisfied only from vagrant waters that escaped from the confines of Colorado control. Kansas' right was considered to be only the dregs remaining after the River had been drained of most of its utility. Whatever Colorado did was done at her own peril. Colorado was willing to take this gamble, for by the postponement of the time of defining the respective rights of the two states to receive the benefits of the Arkansas River stream flow millions of dollars' worth of water could during such time be applied to her benefit at the expense of the State of Kansas.

In this case Colorado has attempted to put "the cart before the horse." Instead of attempting to base the establishment of the rights of the two states upon the equity of need, which is fundamental, she is attempting to establish an equitable right upon her present inequitable depletion, thereby attempting to establish a right upon the basis of a wrong. In fact, a Colorado witness has constantly referred to "Kansas' historical use of water," as if a use, limited by deprivation and the wrongful act of another could ever become the basis of establishment of a right.

XI. Elimination of Wasteful Practices in Colorado Would Benefit Irrigation Therein as Well as Satisfy the Master's Equitable Apportionment.

When we analyze Colorado's existing uses, which she seeks to maintain undisturbed in spite of the manifest inequity between the two states, we find a situation existing, arising from her methods of water administration, which results in uneconomical use and waste within her borders. At page 75 of Colorado's brief we find this statement:

> "There is no finding by the Master of any waste by Colorado in the irrigation practices followed in that state. Kansas does not except to the failure of the Master to make such a finding. The conclusion is thus justified (in fact, it is required by the evidence) that Colorado has not been wastefully using water."

Defendants see no reason why the Master should make such a finding. It is not necessary in any sense to the determination of the question of what should be the equitable apportionment. Neither is waste a material issue in determining that the equities should be restored, since water, whether economically used or wastefully used, is not pertinent to a determination whether it has been *wrongfully* used in deprivation of the rights of another. However, the statement above quoted requires some ref-

erence to the voluminous evidence in the record which demonstrates conclusively that Colorado's present use of water is both uneconomical, extravagant, and damaging to her own interests.

An interstate river problem is viewed in the light of economical use of water, for the reason that rivers are a common resource to states, and the potential irrigable lands are much greater than the available supply. Uneconomical use of water in one area deprives some other area of the opportunity of placing irrigable lands under irrigation (R. 1714).

If, as this Court has said, "A river is a treasure. It offers the necessity of life which must be rationed by those who have power over it" (*New Jersey v. New York*, 283 U. S. 336, *supra*), and if equitable distribution of benefits from the stream flow of the river becomes the basis of such rationing, then the economical use of water becomes of paramount consideration in determining the relative equities of two sovereign states.

(a) The Economical Use of Water

To secure the largest benefit from the use of water, by the greatest acreage the greatest number of individuals and communities, consideration must be given to the farm as a whole so that more acres may be covered, more men

given employment; and more families be maintained on the land. By an economical use of water greater benefits may be obtained for a greater number of people, and provide for a much larger happiness than by applying a greater amount of water on a smaller acreage (R. 2203).

Kansas Exhibit 100 is a tabulation of experiments made in Utah, at Logan Experiment Station in connection with the United States Department of Agriculture on the crop producing power of thirty acre-inches of water applied to different acreages of land. This exhibit can hardly be summarized in a factual statement, and is therefore set out in full:

Crop	One acre 30 inches deep	Two acres 15 inches deep	Three acres 10 inches deep	Four acres 7.5 inches deep	Six acres 5 inches deep
Wheat— Bushels grain	47.51	91.42	130.59	166.16	226.86
Wheat— Pounds straw	4,533	7,908	10,356	13,204	17,916
Corn— Bushels grain	97.12	187.86	268.56	316.56	
Corn— Pounds stover	10,390	16,558	18,021	28,756	
Timothy— Pounds hay	6,054	7,688	11,739	11,928	
Sugar beets— (Tons)	20.82	38.90	55.89	64.84	82.68
Potatoes— (Bushels)	195	373	456	544	691
Alfalfa— Pounds hay	8,840	15,093	29,653		

The foregoing exhibit indicates that the use of the number of acre-feet of water which will produce the most satisfactory yield from the standpoint of the irrigator is

not the criterion of water use which will produce the greatest total yield or benefits from the standpoint of the basin as a whole (R. 2206). It further shows why the desire for a greater yield per acre under irrigation may induce a use of water which, when viewed from the standpoint of the entire basin, may be uneconomical and may reduce the benefits to be obtained from the water supply when considered from the standpoint of the basin as a whole (R. 2206).

Engineer Chew of Water District 2 (Arkansas River basin) is quoted in the 18th biannual report of the State of Colorado of date December 8, 1916, as follows (R. 1724):

> "There never was a better demonstration than this season, proving that in past years overirrigation has been indulged in to the detriment of crops and land injured and waterlogged to a marked extent. In my long experience I have noted that the years when water was scarcest and had to be economically used, better crops resulted."

The facts show that F. H. Newell, former director of the United States Reclamation Service, states:

> "In the history of irrigation in this country there has been evident a gradual but very definite evolution in the ideas of what constitutes proper use of water. . . .

> "In the course of this evolution, the doctrine of beneficial use has become established, but in future development this doctrine must in many cases merge into, or be supplanted by that of economic use.
>
> "The doctrine of beneficial use looks to individual interest; that of economic use to the general welfare of society as a whole. So far as possible water charges, systems of distribution, and regulations should be so adjusted as to make the interest of the individual water user coincide with this public interest."

Doctor Widstoe of Utah, in Principles of Irrigation Practice, states:

> "The new duty of water must be based upon all the knowledge in the possession of man. The water in the stream must be used to cover the largest possible area, so that more men may be given employment and more families maintained on irrigated lands." (R. 1716.)

A diversion of water materially greater than 1.5 acre-feet per acre for direct flow canals is unnecessary, uneconomical, and deprives other areas in the river basin of adequate water supplies.

(b) Excessive and Uneconomic Use by Colorado

The record shows that in the Arkansas basin in Colorado an individual, or ditch, under the protection of an early and unscientific adjudication may apply to the land

lavish and uneconomical quantities of water regardless of a wider and more productive use, and with the state powerless to interfere. A part of this is due to the Colorado system of adjudicating a water right. As an example: In District 17 earlier decrees used one second-foot to 38.4 acres, and also one second-foot to 55 acres; in District 67 approximately one second-foot to 55 acres. Most of these ratios were fixed in the early days of irrigation before actual scientific study of scientific duty of water had been determined. Under present knowledge and experience one second-foot of water can be made to serve 200 acres or more (R. 1378). Liberal and often excessive quantities of water have been adjudicated to Colorado canals. No limit is set by the state as to the amount of water which may be applied to an acre of land. The state is not a party to the adjudication (R. 1364). In Colorado no limit is set as to the maximum water diversion in acre-feet per acre on irrigated lands.

A still further condition, which directly arises out of the method of adjudication of water rights in Colorado on the basis of cubic feet per second alone, comes from the increased water opportunity not originally existing, but which arises through the years as irrigation is practiced through the utilization of seepage and return flow, which

except for the method of adjudication on a second-foot basis would be available to satisfy water uses downstream —in this case, in Kansas.

The period of time in which a ditch would divert water would be materially increased by the use of the return flow water. As an illustration, a ditch which in the early years of irrigation could divert water for 70 or 80 days during the year would be enabled to divert for 140 or 150 days and increase the amount of land served thereby. This increased use could result in a diversion of three or four acre-feet per acre, instead of the two acre-feet per acre of irrigated land originally served (R. 1385). The effect in the Arkansas valley is that many of the older ditches have in fact substantially increased the number of acre feet of water diverted, without any additional adjudication of any sort being resorted to (R. 1385). The effect of this is best stated by State Engineer Hinderlider of Colorado:

> "The penalties which are being paid for the defects in the Colorado form of water adjudications are numerous. One of the most prevailing of these penalties is that nearly every ditch decree given by the Colorado courts,—particularly in practically all of the earlier decrees,—allows too large a volume of water. In other words, nearly every ditch priority was overdecreed. These over-de-

creed rights present a constant difficulty in the administration of the waters of a stream." (R. 1378-'79.)

"Perhaps the chief defect in this Colorado system of administration is that the powers of the water officials are not sufficiently extensive. Their duty is largely limited to seeing that each ditch or reservoir receives from the stream its adjudicated amount of water in its order of priority. As previously stated, many of the ditch decrees are excessive (particularly the older ones), and the courts have ruled that after water has been legally diverted from the stream, the water officials have no further control over the same. This makes it difficult or even impossible for the water officials to pass upon the matter of economical use which as hereinabove stated, the Colorado courts have read into every adjudication decree." (R. 1379.)

"Another penalty is that there is no time limit set out in the Colorado decrees,—that is, the volume of the priority is only adjudicated in second-feet. The result is that the holder of the priority claims the right to a continuous flow of his decreed volume whenever there is water in the stream to supply the same. This results in a great deal more water being diverted under the older priorities than is actually needed by the appropriator. Of course, a considerable part of these over-diversions find their way back into the stream, but are not always available to the appropriator next in order of priority. There is also some loss, even when the return waters are considered." (R. 1381.)

"The penalties resulting from failure to give the water officials more power over the administration

> of the water, are very apparent. The diverter, for all practical purposes, is made the judge of his own necessities up to the limit of the decreed priority of his ditch. The public, as the ultimate owner of the water rights, has no representative to pass upon the question of the wastefulness of the diversion. Consequently, under nearly all of the older ditches very much more water is diverted than can be beneficially applied. A diversion of ten acre-feet during each irrigation season per acre of land is not unusual under some of the older ditches. Of course, as this over-diverted water gets back into the stream; but of necessity the evaporation and other losses are very high in the case of these excessive diversions, and they may also adversely affect a ditch's ability to take water because of the relative locations of its headgate and the locus of the return flow." (R. 1382.)

Judge A. W. McHendrie, one of the esteemed counsel for Colorado, in addressing the State Bar Association of Colorado said:

> "The practical application of the doctrine of priority of appropriation is admittedly unscientific and unsound in securing the ultimate objective—to wit, the great beneficial use of a limited resource. . . .
>
> ". . . The public interest becomes submerged in the individual interest. This results, in many cases, in an excessive use of water by the older appropriators, to the exclusion of a later appropriator who could, in fact, make a much more beneficial use thereof. It permits of wasteful and uneconomic practices." (Kansas Exh. 8.)

The facts amply support these statements.

A study of diversions by the large canal systems in the main valleys east of Canon City shows that excessive diversions of water are being made by some of the larger canals. Canals with senior rights divert excessive volumes of water for the lands irrigated, and do so because water is continuously available under ordinary conditions to their river priorities (R. 1724).

The Rocky Ford canal has very old water rights, and irrigates close to 8,000 acres of land. During the twelve-year period 1920 to 1931 its average yearly diversion was 50,000 acre-feet, or over six acre-feet per acre irrigated (R. 1724). The Catlin canal irrigates about 19,000 acres of land. Its average yearly headgate diversion was 85,000 acre-feet, or 4.5 acre-feet per acre for the twelve-year period 1920 to 1931 (R. 1725). The Lamar canal irrigates close to 7,000 acres. Its average yearly headgate diversion was 35,000 acre-feet, or five acre-feet per acre for the twelve-year period 1920 to 1931 (R. 1725). There is a cluster of canals at Canon City irrigating 10,000 acres of land, which divert from seven to eight acre-feet per acre, and even greater quantities of water (R. 1725).

Division Engineer Chew of Water Division 2 (Arkansas River basin) of date December 8, 1917, on pages 86

and 87 of the 19th biennial report of the State Engineer of Colorado said:

> "The decrees entered in this Water Division are uniformly and greatly excessive in amounts and under the ditches given these excessive decrees the acreage irrigated has been continuously increased and the use of water under the direct flow ditches, where the water is used merely because it is in the river, whether it is needed or not, has led to great waste. This excessive use of water has been indulged in by the users to such an extent that thousands of acres of land have been turned to seepage and become waste.
>
> "An estimate of the amount of water actually diverted from the river for the use of irrigation of lands under the various ditches shows that there is a variation in the amounts diverted in proportion to the lands irrigated, running from practically one acre-foot up to as high as *ten acre-feet* to the acre.
>
> "The difficulty in the distribution of water is that it is based upon the flow of water in cubic feet per second instead of acre-feet dependent upon the necessities of the user. If water could be had at the crucial time in plant growth, it can be made to do double duty of water applied whether it is needed or not, and I have found that the greatest duty of water is therefore attained in connection with storage systems, where the application of water can be made at the crucial time and not dependent upon the fact as to whether water will be in the river available for use.

"While, as stated above, the use has varied from one acre-foot up to ten acre-feet to the acre, as I believe to the great detriment of the lands receiving these excessive amounts, I think from the experiments that have been conducted in the experiment stations of the several arid states, it must be concluded that two acre-feet measured at the headgate is sufficient for the proper irrigation of growing crops, if applied at the proper time, grown in the Arkansas Valley, and while I am aware of the fact that under the decrees ditches have certain vested rights, yet I firmly believe that the excessive use of water should be limited and I believe that a law should be placed upon the statute which would limit the amount of water which any ditch would have the right to divert during an irrigation season not to exceed two acre-feet to the acre." (R. 1722-24.)

Under strict economic use by Colorado canals between Canon City and the Kansas line approximately 290,000 acre-feet of dependable water could be made available yearly at the Kansas line for Kansas needs (R. 1735). This 290,000 acre-feet of water saved under economical use would be available to Kansas irrigators during the irrigation season (R. 1736). The loss of 290,000 acre-feet of water would not necessitate the abandonment of any lands now under irrigation in Colorado (R. 1736).

Apparently the State of Colorado early adopted a system which resulted in lavish and uneconomical use. This

system has remained unchanged since its early adoption, regardless of the fact that the uses which it protects and perpetuates are recognized by Colorado state officials as improper and unsound in the face of modern knowledge of economic use. Although the State of Colorado may be powerless in the face of vested irrigation interests to change this system within her own borders, regardless of the extent to which the public good must be sacrificed for individual ditch gain, it should not be allowed to become the means through which a sister sovereign state is deprived of the benefit of its use for the general good and for more productive results from the unit use of water. If Colorado desires to adjudicate the water supply to which she is entitled, so that it can be used in such lavish fashion that thousands of acres in the Arkansas River basin in Colorado have gone to seep, that is Colorado's business; but when water in Colorado through excessive use is producing seeped areas, she should not complain if this water is surrendered to a sister state where scientific use can be made of it in the interests of greater crop production. Selfish interest must surrender to the general good.

It was early announced by the Supreme Court in *Busey v. Gallagher*, 87 U. S. 577, 22 L. Ed. 452, that:

> "The right of the first appropriator is not unrestricted and must be exercised within reasonable limits with reference to the general condition of the country and the necessity of the people, and not so as to deprive a whole neighborhood or community in the use of the water and vest an absolute monopoly in a single individual."

We believe that the application of the principle stated will be followed by this Court, and that it will be applied with equal facility to a situation where a state must be required to exercise a right within reasonable limits in such a way as not to deprive a lower state of the use of water.

Again in the case of *Wyoming v. Colorado*, 259 U. S. 419, 66 L. Ed. 999, the court stated:

> "Both states recognize that conservation within practical limits is essential in order that needless waste may be prevented and the largest feasible use may be secured. We think that doctrine lays upon each of these states a duty to exercise her right reasonably and in the manner calculated to conserve the common supply." (66 L. Ed. 1021.)

(c) Economical Use in Kansas

In Kansas, water scarcity compelled individual interests to give way to the right of irrigators as a whole. Necessity compelled irrigators to make the greatest possible use out of the dregs of a water supply remaining in the stream.

Kansas ditches were confronted with a situation where resort to some system which would develop the maximum benefit from, and the most economical use of, a meager diversion possibility was essential, unless irrigation was to be abandoned completely.

Division of the limited supply in such a way that each of the ditches would get some water each season has become an accomplished fact. In April, 1912, a consent decree was entered in the District Court of the United States for the District of Kansas. It concerned the five ditches known as the Amazon, Great Eastern, South Side, the Farmers Ditch, and the Garden City Ditch, the Farmers Ditch, the property of Finney County Water Users' Association (R. 2662). The decree provided for a system of rotation or proration among the ditches of the water supply available. It divides the total amount to which any of the ditches are entitled, among all of them, and then provides for a rotation from ditch to ditch when there is not sufficient flow (R. 2663). (For proportions of distribution of water by rotation see pages 27 and 28, Reply of State of Colorado.) This decree provides for division of water by quantities, so many acre-feet to each ditch, in accordance with total quantity of water available (R. 2665). This in effect provided for dis-

tribution of such water as was available on an acre-foot basis.

This consent decree resulted from an effort by the large ditches in Western Kansas, regardless of priority, to make the best use possible of an extremely inadequate water supply. (R. 5992.) Concerning it Witness Knapp testified, "From my knowledge of its operation it effects the most economical use of water possible under those circumstances" (R. 5992). It operates to divide the meager supply between all of the ditches in a manner which permits all of them to operate under a restricted use of water. In the absence of such an arrangement, if water had gone to the ditches in the order of their priorities, a number of the ditches could not have received water enough to have maintained an operating unit. (R. 5993.)

This acre-foot basis provides the only economical method (distribution by quantity rather than rate of flow) possible with a limited supply. Kansas is making the best possible use of the present erratic water supply from Colorado for irrigation, due consideration being given to irrigation economics and water supply handicaps (R. 1743). The distribution of water in conformity with this decree was in charge of a water bailiff appointed by the United States District Court for the District of

Kansas until 1933, when the Division of Water Resources of the State of Kansas, by legislative act, took over the administration and distribution of this water.

At the very close of Colorado's brief, at page 107, appears this statement:

> "An important natural resource must be conserved and utilized that the greatest possible benefit is obtained."

and yet in the face of such a statement, and in the face of the evidence heretofore referred to, showing wasteful and extravagant uses within the State of Colorado, she complains that the equitable apportionment of the Master will disturb those wasteful practices, and that the equitable apportionment made by the Special Master for the express purpose of providing the greatest possible benefit from the water resources of the Arkansas River should not be accepted by this Court.

Apparently Colorado's interpretation of equitable distribution of benefits from the flow of the stream is that she is entitled to retain all of the benefits arising from agriculture under irrigation and give to Kansas only those benefits arising from dry-land farming, without the assistance of a dependable and substantial water supply, while, as pointed out, the evidence clearly shows

that if excessive and unreasonable uses in Colorado which are clearly recognized by its water officials were terminated, from that single source alone there would become available to satisfy any equitable apportionment approximately 290,000 acre-feet of water.

It is true, and cannot be denied, that if Colorado, by adhering to existing uses, chooses to perpetuate a system which allows the older appropriators to make headgate diversions of 5, 6, 8 and 10 acre-feet per acre in order that these privileged priorities would have the benefit of a few more bushels or tons per acre in the yield of crops, there is some force to their argument, but this hardly comports with the principles of equity, even as respects the water users within its own borders. The perpetuation of such a system would of course be optional with Colorado. It would be the result of choice, and not of necessity.

Certainly Kansas and its citizens should not be penalized and deprived of the opportunity to make this water yield manyfold its present production, as it is now utilized, merely because Colorado wishes to protect a lavish and uneconomic use of water rather than ration it in the manner where it will produce the highest returns and bring its benefits to the greatest number of acres. How-

ever, assuming that Colorado desires to perpetuate her present uses, still the evidence shows there is available to Colorado within her own borders, and capable of being utilized, approximately 300,000 acre-feet of water which can be brought into the Arkansas River basin by transmountain water diversions (R. 1456), and that already within the last few years this has been developed to the extent of 50,000 acre-feet or more. This would be hitherto unused water. It will be immediately urged that this water is no part of the supply of the Arkansas River, and therefore not a proper subject of consideration in equitable apportionment of that water supply. This statement is true, but we are here directing our attention to Colorado's claim that she is unable to make restoration to Kansas of an equitable share of stream flow without great damage to her own irrigators.

If equitable apportionment requires the State of Colorado to restore a definite dependable water supply at the state line in order to bring about an equitable apportionment of the benefits to Kansas, little weight should be given to a contention that that portion of Colorado's acreage, which has been developed at the expense of Kansas, should be protected, when Colorado has a water resource which can be utilized to replace for her own use

that water heretofore wrongfully withheld. It will, of course, be urged that she should not be compelled to bear this expense for the sake of supplying water to Kansas irrigators. This she would not be doing. Kansas for years has borne the loss of those benefits, which she was rightly entitled to enjoy, and which she would have been enjoying had not Colorado depletion withheld from Kansas the use of that water. Whatever would be the cost of bringing such transmountain water into the Arkansas River basin would only be for the purpose of supplying her own ditches with water which they have been compelled to restore to Kansas since, as was stated in the case of *Hinderlider v. La Plata River*, that use was beyond the equitable share of the waters of the river which Colorado or her citizens had a right to enjoy.

But there still is a third factor by means of which Colorado could satisfy any schedule of stream flow which the Master may find comports with equitable apportionment without seriously affecting the utility of stream flow for Colorado use. This is through the utilization of the existing reservoir storage in Colorado, to pass surplus waters in usable supplies across the state line as a substitute and in lieu of uses by upper ditches in Colorado of stream flow as it passes their headgates.

As we have previously pointed out in this brief, with the reservoirs now existing within Colorado, among which is the newly constructed Caddoa reservoir, the waters of the Arkansas River including flood waters are for the most part subject to control within the borders of the State of Colorado, and these quantities may well be turned to the practical use of satisfying Kansas' "right," and creating a dependable flow commensurate with such right. Of course it will be urged that these reservoirs, with the exception of Caddoa, constructed at Colorado's expense should not be used for the benefit of Kansas. Such argument is fallacious in that they would not be used for the benefit of Kansas ditches, but only for the benefit of those Colorado ditches, who by reason of their wrongful depletion of stream flow into Kansas would be compelled to permit such water so wrongfully withheld to pass down the stream to rightly satisfy Kansas' equitable share.

As some indication of the quantities of water available for such purpose in Colorado reservoirs and without reference to Caddoa, the record shows the storage amounts which are available on May 1 in the Colorado reservoirs. This water might well help to satisfy any water schedule set up by the Master to bring about the

restoration of depleted stream flow into Kansas resulting from diversion of the entire ordinary flow of the stream during the May, June and July period.

From 1926 to 1931 the record shows the actual quantities of water in storage in the Arkansas basin reservoirs in Colorado on May 1. These figures are as follows (Kansas Exh. 66):

1926	219,861 A. F.	Gain over Nov. 1, 1925	102,861 A. F.
1927	122,553 A. F.	Gain over Nov. 1, 1926	35,553 A. F.
1928	173,328 A. F.	Loss over Nov. 1, 1927	20,672 A. F.
1929	246,806 A. F.	Gain over Nov. 1, 1928	52,806 A. F.
1930	312,753 A. F.	Gain over Nov. 1, 1929	73,353 A. F.
1931	261,899 A. F.	Gain over Nov. 1, 1930	66,899 A. F.

With these amounts shown to be in storage on the 1st day of May, the record shows that during May, June and July of 1926 there were 49½ days out of 92 days when the flow into Kansas was less than 200 second-feet. Yet from water in storage Colorado could have supplied 50,000 acre-feet per month of additional state line flow without changing Colorado's direct diversions for irrigation.

During May, June and July of 1927 there were 72 days out of 92 when the flow into Kansas was less than 200 second-feet. Yet from storage Colorado could have supplied 40,000 acre-feet per month without changing Colorado's direct diversions for irrigation.

During May, June and July of 1928 there were 37 days

out of 92 when the flow into Kansas was less than 200 second-feet. Yet from storage Colorado could have supplied 50,000 acre-feet per month without changing Colorado's direct diversions for irrigation.

During May, June and July of 1929 there were 86½ days out of 92 when the flow in Kansas was less than 200 second-feet. Yet from storage Colorado could have supplied 50,000 acre-feet per month without changing Colorado's direct diversions for irrigation.

During May, June and July of 1930 there were 78 days out of 92 when the flow into Kansas was less than 200 second-feet. Yet from storage Colorado could have supplied 50,000 acre-feet per month without changing Colorado's direct diversions for irrigation.

During May, June and July of 1931 there were 75 days out of 92 when the flow into Kansas was less than 200 second-feet. Yet from storage Colorado could have supplied 50,000 acre-feet per month without changing Colorado's direct diversions for irrigation.

It would therefore clearly appear that with 290,000 acre-feet of the water supply saved by reason of a more economical use thereof, with approximately 300,000 acre-feet of additional water available for use in the Arkansas River basin in Colorado, and with several hundred thou-

sand acre-feet available in storage on approximately the 1st day of May in Colorado reservoirs, the State of Colorado and its water users are in position to restore an equitable apportionment of the benefits from the flow of the Arkansas River to Kansas, without compelling a single acre of land in Colorado now using water from this river to revert to dry farming conditions similar to those which Colorado by her depletion of stream flow into Kansas has imposed upon Kansas irrigators.

Throughout this long controversy the State of Colorado has attempted to maintain the position that it is entitled to all the water of the Arkansas River that originates within its borders. The negation of this theory by this Court did not change the State's attitude. Later, in the case of *Wyoming v. Colorado*, the same doctrine was urged, and again it was announced that an upper state could not invade the equitable rights of a lower state to the use of the waters of an interstate stream. In spite of these declarations of the highest court, Colorado nevertheless continued to construct reservoirs, divert more water, irrigate more acres, with the full knowledge from such previous declarations that such uses might constitute an invasion of Kansas' equitable share of the water. With the knowledge that until a determina-

tion of the equitable apportionment of the Arkansas River between the State of Kansas and the State of Colorado was made with certainty and definiteness, no use of water would vest in either Colorado or her citizens, a right greater, or beyond that, constituting her fair and equitable portion. Colorado authorities well knew that the time must come when they would be compelled to replace in the stream sufficient usable flow to restore a right to Kansas, of which she, as a sovereign state, could not be deprived.

XII. Colorado's Objections to the Plan of the Master Securing the Delivery of the Apportionment to Kansas, and Determining the Amount as it Originates, Through the Use of Index Stations, Are Untenable.

Colorado states at page 65 of its brief, "The recommendations of the Master as to the proportionate division between the states are uncertain." The argument submitted by Colorado to support this statement is its own refutation. Complainants say that the Master recommends that the average dependable supply of the River, which he finds to be 1,110,000 acre-feet should be apportioned between the states on a basis of 925,000 acre-feet annually to Colorado and 185,000 acre-feet annually

to Kansas. There is no uncertainty in such a statement of apportionment.

Complainants further argue respecting the apportionment, "This is on a ratio of five to one." Apparently the report of the Master was sufficiently certain to enable Colorado to arrive at this correct statement of the ratio of apportionment. Defendants are in complete agreement with complainant's statements of the apportionment made by the Master, as well as the ratio of apportionment. Certainly since all parties are in agreement there can be no possible objection on the part of Colorado to translating the ratio of five to one into the percentage which such ratio reflects, namely 83.33 percent to Colorado and 16.67 percent to Kansas. Defendants have suggested in their exceptions and brief that these percentages be added to the finding of the Master, so that not only the amount of apportionment but the percentage of apportionment, which are synonymous, will both appear.

The next complaint urged by Colorado respecting the plan of the Master is stated at page 62 of its brief, "The recommendations of the Master as to measuring stations reflect a misconception of the existing conditions." An examination of the report will indicate that the Master

had a very clear conception of the existing conditions on the River and of the character of flow of the stream. The Master likewise clearly appreciated that he had for consideration a water supply which fluctuated from day to day and year to year. The report shows that he understood not only the necessity of determining the quantum of the supply available for apportionment in accordance with the natural fluctuation of the supply as it was created by nature, but also the importance of protecting the deliveries to Kansas of its equitable apportionment, once the supply to be divided was determined. Therefore, the Master's recommendations as to measuring stations are the well selected links which connect the ascertainment of the available water supply as it originates, with deliveries to Kansas, in accordance with the decreed apportionment. Two of these stations are classified as index stations. The measured flow passing such stations, although only a portion of the supply available for irrigation use and for apportionment, is of such typical character that it will serve as a satisfactory index from which can be computed the amount of the total available water supply subject to delivery in accordance with the percentage of apportionment. His statement, "The water measured at those stations will vary up or down as those

two types of water supply in the basin vary, and the burden of benefits of wet years and dry years would be borne in the same proportion as the equitable distribution of water supply is decreed," (Finding of Fact Twelve) shows no misconception of existing conditions of stream flow but a very clear understanding of it. The measuring station at the state line is for the purpose of determining that deliveries are made as decreed. Thus, the Master set up a plan, simple to administer and easy to enforce, which would follow the admonitions of this Court and provide for deliveries "upon the basis of equality of rights as to secure as far as possible to Colorado the benefits of irrigation without depriving Kansas of the like beneficial effects of a flowing stream."

In making an equitable apportionment between the states the Master was dealing with an equitable right. He used as a basis the average annual dependable supply of 1,110,000 acre-feet, eliminating from consideration the abnormal and excessive water years. This was proper and followed the formula suggested by this Court as a proper method in the case of *Wyoming v. Colorado*.

However, although the apportionment was made by the Master on the basis of average annual dependable supply, deliveries must necessarily be made as the water

supply originates, whether in excess of or less than the average annual dependable supply. The two measuring stations suggested by the Master must serve as an index to the *actual water supply* of the basin as it originates, *not* the *average dependable supply* from which the high water years have been eliminated. The index figure of 670,380 acre-feet, referred to in Kansas Exh. 134 included the high water years of 1914, 1915, 1921 and 1923. Likewise the actual average annual water supply of the basin, found by the Master to be 1,240,000 acre-feet includes those same high water years. This requires that the basis, upon which the index station water supply shall be used to compute the total supply subject to division, must be the relationship which the 670,380 acre-foot average index supply bears to the average water supply of the basin, found by the Master to amount to 1,240,000 acre-feet, and not to the 1,110,000 acre-feet the Master found to be the average dependable supply.

In such a division it would be absurd to say that any years in the consideration of deliveries should be excluded. Is it to be assumed that because a given year happens to be one of abundant water supply, it is to be excluded from the equitable apportionment provided for in the decree? Obviously not. We should not assume,

merely because such years as 1914, 1915, 1921 and 1923 were excluded in the determination of dependable supply, that the water supply of such years is not to be divided and apportioned by the same method of determination as any other year.

The Master included in his report no actual computation of the percentage of the average index water supply of 670,380 acre-feet, required to give deliveries to Kansas of one-sixth of the actual water supply of the basin. It is obvious, however, that it requires 30.87 percent of the average annual index flow of 670,380 acre-feet to equal 16.67 percent or one-sixth of the average annual basin water supply of 1,240,000 acre-feet as determined by the Master.

Colorado makes the statement at page 65 of its brief:

> "It thus appears that there are three possible interpretations of the report so far as the requirement of the delivery to Kansas is concerned, namely (1) one-sixth or 16.67 percent of the combined index flows; (2) 30.87 percent of the combined index flows; (3) 27.59 percent of the index flows."

An analysis of these three suggested interpretations of the Master's decree will indicate that (1) and (3) have no reasonable support from the language of the decree. The first suggestion, that deliveries to Kansas shall con-

stitute only 16.67 percent of the combined index flows, hardly deserves discussion. No one would conclude from a reading of the Master's report that the deliveries of water to Kansas were to constitute 16.67 percent of index flows rather than 16.67 percent of the basin water supply. The Master has clearly shown that he has apportioned to Kansas 16.67 percent of the basin water supply, and not 16.67 percent of 670,380 acre-feet. Is it to be assumed that the Master, having apportioned to Kansas 16.67 percent of the basin water supply, would in providing for deliveries effectuate the delivery of only 9.8 percent of such available supply? Obviously not. Only one attempting to minimize deliveries to the smallest possible amount would so interpret the Master's report. Is the plan recommended by the Special Master, of using index stations to compute the daily water supply of the basin subject to irrigation uses, in order that the burden of dry years and the benefit of excessive water years may be borne by both states in the same proportion as the equitable supply is decreed, susceptible of an interpretation which would completely destroy that equitable distribution? We believe not.

If we turn to a consideration of the third interpretation of the Master's plan of computing deliveries, namely

that it might be thought to be 27.59 percent of the combined index flows, we find again that in suggesting such interpretation Colorado is at complete variance with the only conclusion to which the language used by the Master is susceptible. This percentage, it is true, is the correct ratio which the index water supply bears to the total annual dependable water supply, which the Master used in determining the equities, but, from which, as before stated, were excluded the high water years.

This brings us to the inevitable conclusion, that the only correct percentage which can be applied with respect to the apportionment of index flows is 30.87 percent to Kansas, the amount suggested by the defendants and referred to in defendants' original brief.

Defendants believe that the report is clear as to the purpose served by the two index stations selected. Three questions and their answers make this manifest—

(1) Does the actual water measured at these two stations constitute the water supply available for distribution? The answer is "No." The average of the water at these two stations constitutes only about 54 percent of the average basin supply.

(2) Does the flow passing these two stations constitute an index from which can be computed the average de-

pendable supply? The answer is "No." The average flow at these two stations includes all high water years.

(3) Does the measured flow passing these two stations constitute an index from which can be computed the actual water supply available for distribution? The answer is "Yes."

Even Colorado recognizes that these index stations were to serve the sole purpose of computing the total supply subject to division between the states, as is clearly shown by the statement in its brief at page 63 that the combined index flows amounting to 670,380 acre-feet for the period 1908 to 1938 represented 60.39 percent of the factor used by the Master in determining equities.

The mere fact that the Master did not specifically name the percentage, either in the case of apportionment or with respect to ascertainments of deliverable amounts, is not an argument against the plan. Counsel for Colorado have no difficulty in seeing that the apportionment of 925,000 acre-feet to Colorado and 185,000 acre-feet to Kansas represents a ratio of five-sixths of the water to Colorado and one-sixth to Kansas and so state. Neither does Colorado have any difficulty in ascertaining that the index stations are to be used for the purpose of computing the water supply subject to delivery on the basis of the

delivery of 30.87 percent of the index supply to Kansas, and they so state. That actual percentage appears in their brief. They have computed it, and certainly realize that that percentage of the index flow does insure a delivery to Kansas in conformity with the water supply as it originates day by day of an amount which will equal 16.67 percent of the basin water supply.

It is because any language, regardless of its true intent and meaning, would always be subject to distortion by those whose whole policy has been to prevent the escape of any vagrant waters into Kansas, that defendants have suggested to this Court that the actual percentages be expressly set out in order that a decree of this Court will provide for administrative officials a mathematical formula, which cannot be misinterpreted.

While Colorado points out at page 102 of its brief that Kansas will receive 206,946 acre-feet, in the average year of 1,240,000 acre-feet of water supply, which is in excess of the 185,000 acre-feet as determined by the Master, they fail to point out that in the same year Colorado will receive 1,034,000 acre-feet, which is also in excess of the 925,000 acre-feet found by the Master, or 109,000 more for Colorado, and only 21,946 more for Kansas. Thus, as was clearly expressed in Finding of Fact Twelve, "the

burden of (or) benefits of wet years and dry years will be borne in the same proportion as the equitable distribution of water supply is decreed."

Colorado states at page 69 of its brief:

> "A variable flow cannot be delivered when required. Colorado is without power to make the rains fall and the snows melt at such times as will satisfy the whims or the needs of Kansas irrigators. Natural phenomena are not susceptible of control by court decree."

Kansas will agree that this Court cannot make the rains fall and the snows melt, but we are confident that, when the rains do fall and the snows do melt, this Court by a decree can compel the delivery of 30.87 percent of the index flows recorded by measuring stations, which will insure to Kansas a delivery of the equitable apportionment found by the Master to be 16.67 percent of the basin water supply.

Colorado makes the assertion at page 85 of its brief, "There is no relationship between the so-called index flows and the state line flow." In reply we ask the question—Why should there be? State line flows, as they exist, are only the residual flows passing across the state line after depletion by Colorado of practically all of the dependable flow necessary for irrigation use. As such

flows have existed in the past they are the mere reflection of a wrong, and show an invasion of a right of Kansas to have a reasonable water supply from which irrigation may be practiced with some consistency. The index flows are merely a part of the plan found by the Special Master to be the most effective means of rectifying that past wrong, and providing for delivery to Kansas something of the same quality of benefits of water as those enjoyed by Colorado, even though in its totality it will represent but a small fraction of the total benefits enjoyed by Colorado from the use of this water resource upon which the arid area in each state is dependent.

XIII. Flood Waters

Colorado states the Kansas position with relation to flood water is unfair (P. 103 of its brief).

The answer to this contention can be summed up in a few words. It is briefly this: By such disposition of the flood waters Colorado may store such of the flood waters as it has facilities for, and use it for the purpose of making deliveries to Kansas in accordance with the index water supply. In this matter the Kansas position is of benefit to Colorado. On the other hand, by this method of handling the situation the position of Kansas

is not jeopardized as a result of being charged with flood flows coming at such times and in such amounts as to be unusable.

XIV. The Solicitor General's Memorandum

The Master in paragraphs one and two of the Recommended Decree (Report pages 19-20) states, that each of the respective states "is awarded, granted and decreed *the owner and* entitled to the use of" specific quantities of water.

Colorado states at page 96 of its brief, that the question of ownership of the water of a nonnavigable stream is of no importance in the case at bar. Colorado further states that it is one of the fundamental issues in the case of *Nebraska v. Wyoming, et al.*, Original No. 7, 1942 Term, now pending and undisposed of on the docket of this Court.

A similar contention is advanced by the United States through its Solicitor General in a memorandum filed in this Court. A like memorandum has been filed by the State of Nebraska.

Defendants agree that the question of ownership has not been made an issue in this case, and are in accord with the suggestion made by the United States and the

States of Colorado and Nebraska that a decision upon this point be reserved for consideration in the case of *Nebraska v. Wyoming*, supra.

XV. Conclusion

In answering Colorado's brief defendants are necessarily limited to treatment of only a few of the many inconsistencies which appear therein. To have made a complete answer to all of them would have resulted in a complete review of all the evidence, and would have unnecessarily extended a brief which is already too long.

Colorado has made a sweeping denunciation of the entire Master's report. It has offered nothing in its place. Colorado has shown by its entire brief, and by the nature of its exceptions to the Master's report, that it does not desire this Court to enter a decree which will afford any relief to Kansas or afford even a small but useful supply of water for irrigation purposes. It still believes, although professing its willingness to do equity, that it is entitled to all of the water of this interstate stream originating within its borders, and, that any apportionment, which requires the placing of a limitation or restriction upon Colorado, amounts to the impairment of the quasi-sovereignty of that state.

Defendants feel that the apportionment of five-sixths

to Colorado and one-sixth to Kansas is a rather meager share, considering that the need for water is substantially the same in the arid region of both states. However, in order that there be finality to this long controversy, Kansas has accepted the report of the Special Master as the proper basis for a decree, suggesting to this Court only a limited number of changes, largely mathematical percentages, intended to avoid a possible misinterpretation of the Master's Recommendations.

Defendants trust that by this answer they have demonstrated to this Court that the Master's findings are fully supported by the record.

Respectfully submitted,

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